12-2010

A STRUCTURAL EQUATION MODEL OF LEADER ATTRIBUTES IN THE PRINCIPALSHIP

Amy Young
Clemson University, younga@gwd50.org

A STRUCTURAL EQUATION MODEL OF LEADER ATTRIBUTES IN THE PRINCIPALSHIP

A Dissertation
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy
Educational Leadership

---

by
Amy Gregory Young
December 2010

Accepted by:
Dr. Russ Marion, Committee Chair
Dr. Laura Olson
Dr. Mike Campbell
Dr. Hans Klar

ABSTRACT

To become a principal in South Carolina, one must have teaching experience, a master's degree, and certification in the area of primary responsibility. Beyond what is learned through coursework, internships, and certification tests, what intangible factors critically influence a principal's actions and decisions, and (ultimately) success? Trait theory begs the question of whether any of these criteria truly influences the decisions and actions of the principalship. Are there interactive traits of leadership that describe the behaviors of school principals? This study revisits trait theory by examining leader attributes relative to the principalship of South Carolina public schools. This study replicates, with a minor modification, the trait and skills domains of the Zaccaro, Kemp, and Bader (2004) model in an educational setting. Sensemaking was added to the proximal attributes identified by Zaccaro et al. Attributes studied include personality, cognitive abilities, motives and values, problem-solving skills, social appraisal skills, sensemaking, and expertise/tacit knowledge. These data were analyzed using exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modeling (SEM). Data analysis failed to support the leadership model presented by Zaccaro et al. (2004); instead, a new leadership model emerged. Despite relatively strong path coeffcients, the structural equation leadership model was unable to explain a significant amount of variance in the model.

DEDICATION

From the time that I was a little girl, my parents instilled in me the importance of education and the belief that I could do anything through hard work and dedication. Although my father passed away prior to me beginning this educational endeavor, I know that I have achieved the dream he always had for me.

To my mother: Your love, support, and prayers encouraged me throughout this process, as they do with each day of my life. You have given much that I may achieve this degree and for that, I am so very thankful. I am proud to be your daughter and I share this accomplishment with you.

To my husband: Something wonderful happened when I met you! Thank you for your love and constant support. Thank you for understanding the necessary time commitment to this dissertation and for reminding me that breaks were also necessary.

It is with much gratitude and love that I dedicate this dissertation to my parents, George and Elizabeth Gregory, and to my husband, John Young.

ACKNOWLEDGMENTS

I am blessed to have traveled this educational journey with nine dear friends through the Western Piedmont Education Consortium (WPEC) cohort. To each of you, I am forever grateful for your friendship and encouraging words throughout our studies.

To my friends, family members, and colleagues, thank you for believing in me, encouraging me, and supporting me throughout this doctoral process.

To my committee members, thank you for sharing your knowledge and for guiding me through this process. Dr. Olson, thank you for always being prompt with your responses, for your encouraging words, insight and editing, and for teaching me about "zeitgeist" while sharing your enthusiasm for political science. Dr. Campbell, thank you for keeping me grounded and for your insightful, practical approach to leadership. Dr. Klar, thank you for joining my committee and for providing qualitative insight as you did.

Last but certainly not least, I must thank my chair. Dr. Marion, without you, I could have not achieved this degree. Your knowledge pushed me and your mathematical mind led me through this process. Thank you for the many, many hours that you devoted to my study and to the writing of this dissertation. You believed in me, encouraged me, and challenged me along the way. I am forever grateful for the opportunity of working with you in this process.

TABLE OF CONTENTS

Page

Table of Contents (Continued)

Page

LIST OF TABLES

List of Tables (Continued)

Table Page

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

"In the best of times, we tend to forget how urgent the study of leadership is. But leadership always matters, and it has never mattered more than it does now" (Bennis, 2007, p. 2). Leadership matters in our country, and more than ever leadership matters in our schools. With federal and state mandates for accountability of student achievement, shrinking finances, and the rise of vouchers and charter schools, our public schools need strong leadership. Our public schools need principals who can encourage and facilitate student achievement, who can spend wisely and maximize their financial resources, and who can make their schools appealing to students, parents, teachers, and the community. What sort of person can be such a leader? What personal attributes are most important for success in a leadership role? What contextual factors influence the leadership role of a principal? Asking such questions leads one to the path of trait-based leadership.

Trait-based leadership has been challenged because of the argument that a leader in one situation may not be a leader in a different situation. Arguably, these challenges began with Stogdill's (1948) review of trait research. Situational and contingency theories emerged following the attack on trait theory. These two theoretical perspectives maintained the importance of traits, but focused most intently on the interaction of traits and particular situations. Despite the decline and critiques of trait and skill leadership models throughout the 20th century, we should not ignore this excerpt from Stogdill's 1948 review of leadership literature:

> Must it then be assumed that leadership is entirely incidental, haphazard, and unpredictable? Not at all. The very studies which provide the strongest arguments for the situational nature of leadership also supply the strongest evidence that leadership patterns as well as non-leadership patterns of behavior are persistent and relatively stable. (Stogdill, 1948, p. 65, as cited in Zaccaro, 2007, p. 10)

Stogdill's assertion that "leadership as well as non-leadership patterns of behavior are … relatively stable" is supported by recent research. Gurr, Drysdale, & Mulford (2006) concluded from two case studies of public schools that educational leaders possess "a common and consistent set of personal traits, behaviours, values and beliefs" (p. 371). Their research indicated that principals' values and beliefs mattered. These values and beliefs include "honesty and openness, flexibility, commitment, empathy with others and a sense of…'innate goodness'" (p. 375). They found that effective leadership traits include passion, enthusiasm, a high level of motivation for helping children, persistence, determination, assertiveness, excellent interpersonal and communication skills, and being achievement oriented. Perhaps the state of trait theory is best summed up with this statement from Northouse's leadership text, "in short, the trait approach is alive and well" (2004, p. 16).

The trait approach to leadership makes several theoretical assumptions about human nature. The first assumption derives from an idea from evolutionary psychology that psychological traits develop through mutation and selection (Judge, Piccolo, & Kosalka, 2009). Consequently, there are certain traits that promote leadership and fitness; these trait differences distinguish leaders from non-leaders (Judge et al., 2009). The second assumption is rooted in behavioral genetics. According to Turkheimer (2000), all behavioral traits are heritable, so in part leaders are born and not made. "To a significant

degree, leadership is rooted in individual genes, namely their genetic predispositions … that predispose them to seek leadership positions, to be selected by others into such positions, and to thrive in such positions once selected" (Judge et al., 2009, pp. 860-861). Judge et al. (2009) cited several studies showing that various measures of leadership are heritable. The final assumption about human nature derives from socioanalytic theory. The assumption is that people live in groups and these groups are hierarchical in nature. As a result, leaders' personalities lead them either to get along with others or to try to get ahead of others (or sometimes both when the leader is Machiavellian in nature). We might consider the ability to get along a "bright" leader trait, while the desire to get ahead is considered a "dark" leader trait. Both sides of the personality trait might serve leaders well depending on the situation (Judge et al., 2009).

This study revisits trait theory by examining leader attributes relative to the principalship of South Carolina public schools. According to Zaccaro (2007), there are two types of attributes that influence leadership: distal attributes and proximal attributes. Distal attributes are traits with which a person is born; they tend to mold and influence one's actions from a distance. Proximal attributes are traits that develop over time and tend to be more situational specific; they tend to influence one's actions more directly. Working together, these attributes influence the leadership process (Chen, Gully, Whiteman, and Kilcullen, 2000). Based on this theoretical foundation, I pose the following research question:

(1) Are there interactive traits of leadership that describe the behaviors of school principals?

Zaccaro et al. (2004) imply that there is a concrete reality associated with leadership and it consists of three distal attributes and three proximal attributes. If that is the case, then these attributes should emerge from the data of this study. If the reality associated with leadership is not concrete, then different attributes may emerge from the data.

Purpose of the Study

A review of educational literature provides us with information supporting the importance of school leadership. In a paper prepared for the Task Force on Developing Research in Educational Leadership, which is a division of the American Educational Research Association, Leithwood and Riehl argued that what we know about school leadership is summarized in five claims:

1. Leadership has significant effects on student learning, second only to the effects of the quality of curriculum and teachers' instruction.
2. Currently, administrators and teacher leaders provide most of the leadership in schools, but other potential sources of leadership exist.
3. A core set of leadership practices form the "basics" of successful leadership and are valuable in almost all educational contexts.
4. Successful school leaders respond productively to challenges and opportunities created by the accountability-oriented policy context in which they work.

5. Successful school leaders respond productively to the opportunities and challenges of educating diverse groups of students. (Leithwood & Riehl, 2003, pp. 2-6)

Beyond acknowledging the importance of leaders in our schools, I believe we must examine the types of persons who occupy leadership positions. This study does just that by exploring the impact of personal attributes on job-related performance by principals. By examining both distal and proximal attributes of successful principals, this study provides valuable information to principals themselves and to administrative personnel at the district level regarding the most prevalent traits of persons placed in the leadership role of principal. The distal attributes to be studied include personality, cognitive abilities, and motives and values. The proximal attributes to be studied include problem-solving, social appraisal skills, expertise and tacit knowledge, and sensemaking. While previous studies have been conducted and various articles have been written about these attributes individually (Anderson, 2006; Judge, Colbert, & Ilies, 2004; Chan & Drasgow, 2001; Spillane, White, & Stephan, 2009; Côté, Lopes, Salovey, & Miners, 2010; Goldring, Huff, Spillane, & Barnes, 2009; Weick, Sutcliffe, & Obstfeld, 2005), I have found no study that has explored all of them at once with respect to the field of educational leadership. This study examines all of the above-mentioned attributes, their relationships to each other, and the extent to which these attributes are present in principals.

Theoretical Foundation

My study is derived from Zaccaro, Kemp, and Bader's (2004) multistage model of leadership, which was based on an analysis of leadership in the armed forces and a literature review of various studies related to traits. Zaccaro and his colleagues proposed that the weakness of previous studies of trait theory rested in the attempt by researchers to correlate leadership to a single leadership characteristic. Zaccaro et al. argued "leadership represents a complex and multifaceted performance domain and, like any complex behavior pattern, will be predicted by a constellation of attributes" (p. 120). They proposed that leadership is determined both by attributes and by skills. Zaccaro et al. (2004), building on research conducted by Chen et al. (2000), distinguish between distal traits and proximal traits. Distal traits are more trait-like; they "are not specific to a certain task or situation," and "are more distal from performance than are state-like individual differences" (Chen et al., p. 835). Proximal traits are more state-like; they "are specific to certain situations or tasks and tend to be more malleable over time," and are more proximal to one's performance (Chen et al., 2000, p. 835). Zaccaro and his colleagues put forth a multistage model of leader characteristics and performance. From this model, they propose: "Cognitive abilities, personality, and motives will influence leadership processes and outcomes through their effects on social appraisal skills, problem-solving competencies, expertise, and tacit knowledge" (p. 121). In their model, Zaccaro et al. represent distal attributes as a set of three overlapping circles (personality, cognitive abilities, and motives and values) and proximal attributes as another set of three overlapping circles (problem-solving, social appraisal skills, expertise and tacit

knowledge). They argue that "each set of predictors operates jointly with other predictors to influence particular outcomes; that is, each set is defined as being necessary but not sufficient for the prediction of targeted criteria" (p. 123).

My study replicates, with a minor modification, the trait and skills domains of the Zaccaro et al. (2004) model in an educational setting. In addition to the proximal attributes identified by Zaccaro et al., sensemaking was added. I added sensemaking because it is intertwined with the attributes problem-solving and tacit knowledge (Sleegers, Wassink, Veen, Imants, 2009). On a daily basis, principals problem solve by using expertise and tacit knowledge to process obtained information in a manner that makes sense – sensemaking. For this reason, four proximal attributes are identified in this study.

My study first seeks to confirm the applicability of their three distal traits and the four proximal traits. An exploratory factor analysis (EFA) of my data fails to support the proposed model of Zaccaro et al. (2004) in that the survey items used in the present study do not load on the specific traits identified. Instead, an EFA of my data supports a five-factor model that differs significantly from the model proposed by Zaccaro et al. The five factors are Confidence, Makes a Difference, Perception Leader, Incompetent, and Lacks Social Skills. These factors, or latent variables, were entered into AMOS for a confirmatory factor analysis (CFA). The initial CFA analysis of the five-factor model provided values that indicated adequate fit, and with modifications to the model, good fit was attainable. The statistical values for the five-factor model were consistently better than the values obtained when a CFA was conducted on the model proposed by Zaccaro

et al. The EFA and CFA analyses identified three types of principals: (a) confident leaders, (b) incompetent leaders, and (c) leaders lacking social skills. Each of these three types of leaders tends to apply their attributes of personality, cognitive abilities, social appraisal skills, problem solving, and expertise and knowledge in one of two ways: by working to make a difference ("Makes A Difference") or by displaying an air of leadership ("Perception Leader"). Demographic identifiers were also considered in the analysis. As a result, a new leadership model was proposed and tested using structural equation modeling (SEM).

Problem Statement

To become a principal in South Carolina, one must have teaching experience, a master's degree, and certification in the area of primary responsibility. Trait theory begs the question of whether any of these criteria truly influences the decisions and actions of the principalship. Illustrative examples of two principals in my own experience come to mind. Both of these principals had teaching experience, both had advanced degrees, and both possessed certification in the area of primary responsibility. However, one principal was removed from the position after two years, while the other principal is currently serving successfully after five years. Both were equally prepared, but one succeeded while the other failed. There must be something beyond certification and educational background that influences the success and effectiveness of a principal. Beyond what is learned through coursework, internships, and certification tests, what intangible factors critically influence a principal's actions and decisions, and (ultimately) success? Trait

theorists such as Zaccaro et al. (2004) propose that the difference between success and failure lies in leader attributes. This study explores the impact of principals' personal attributes on their job-related decisions and actions by answering the following question (reiterated from the introduction to this chapter):

(1) Are there interactive traits of leadership that describe the behaviors of school principals?

Definitions

To establish a clear level of understanding of the various components involved in this study, the following terms are defined.

1. Distal traits: trait-like, "not specific to a certain task or situation…more distal from performance than are state-like individual differences" (Chen et al., 2000, p. 835). In this study cognitive abilities, personality, and motives and values are identified as distal traits.
2. Proximal traits: state-like, "specific to certain situations or tasks and tend to be more malleable over time," and are more proximal to one's performance (Chen et al., 2000, p. 835). In this study social appraisal skills, problem solving, expertise and tacit knowledge, and sensemaking are identified as distal traits.
3. Personality: manner in which one behaves and interacts with others, distal trait.

4. Cognitive abilities: general intelligence, creative reasoning and problem-solving skills, distal trait.
5. Motives and values: drive or reason for action, distal trait.
6. Problem-solving: ability to understand the issue at hand and determine a course of action, proximal trait.
7. Social appraisal skills: ability to understand others or given situations and to respond appropriately, proximal trait.
8. Expertise and tacit knowledge: possession of much knowledge about a particular topic and possession of knowledge that is difficult to teach, proximal trait.
9. Sensemaking: ability to understand a situation even though the reality of it seems questionable or impossible, proximal trait.

Limitations

As with any research, this study has its limitations. My study includes principals of various grade levels from different geographic locations across South Carolina (a map of the participating districts is included in the appendix). As a result, care should be taken when applying these results to principals in other states or principals of one particular grade level.

Another limitation of the study involves completion of the survey. While it was appropriate for principals to complete the survey about persons in the principalship, their responses were influenced by their opinions of themselves as leaders. A different

perspective might have been obtained had persons at the district level or classroom teachers completed the survey about persons in the principalship or if principals had completed the survey specifically about themselves.

Organization of the Study

This study is presented in five chapters. Chapter 1 provides an introduction to the present study of leadership traits. Chapter 2 provides a review of the literature and previous research. The methods of the current study are discussed in chapter 3, while chapter 4 presents the findings of the study. Chapter 5 provides a closing discussion of the implications of my research for the field of educational leadership.

CHAPTER TWO

LITERATURE REVIEW

The 19th and early 20th centuries could easily be called the era of "great man" leadership because perspectives of management at that time typically related to exceptional qualities possessed by managers (Taylor, 1911; Gilreath, 1912; Barnard, 1938; Selznick, 1957). These early writings were about management and administration, however, "the trait approach was one of the first systematic attempts to study leadership… to determine what made certain people great leaders" (Northouse, 2004, p. 15). Leadership trait theory, which was popular in the 1940s and 50s, was the culmination of these management perspectives.

Previously, trait-based leadership was discredited in part because scholars could not consistently define leadership ability across different situations (Zaccaro, 2007). Arguably the discrediting began with Stogdill's 1948 review of 124 trait studies conducted from 1904 to 1948, which "failed to support the basic premise of the trait approach that a person must possess a particular set of traits to become a successful leader" (Yukl, 2002, p. 177). Stogdill (1948) reported that traits alone were not enough to define a leader; instead, the value of any given trait depended upon the situation in which it was expressed. Soon after the publication of Stogdill's study, leadership researchers began to look at leadership in the context of specific situations.

In 1974, Stogdill again reviewed trait research. This time he reviewed 163 trait studies conducted from 1949 to 1970. He again failed to create a list of universal traits associated with leadership, but even so, Stogdill argued that leadership depended upon

both personality and situation. This second review identified 10 specific leadership characteristics:

(a) drive for responsibility and task completion,

(b) vigor and persistence in pursuit of goals,

(c) venturesomeness and originality in problem-solving,

(d) drive to exercise initiative in social situations,

(e) self-confidence and sense of personal identity,

(f) willingness to accept consequences of decision and action,

(g) readiness to absorb interpersonal stress,

(h) willingness to tolerate frustration and delay,

(i) ability to influence other persons' behavior, and

(j) capacity to structure social interaction systems to the purpose at hand.

(Northouse, 2004, p. 17)

While some critics (Stogdill 1948; Mann, 1959) may claim that trait theory is dead, others still have significant interest in it as a theoretical framework. Ironically, the same writing that many point to as the demise of trait theory also provides support for it. I again point out Stogdill's statement from his 1948 review, he stated:

> Must it then be assumed that leadership is entirely incidental, haphazard, and unpredictable? Not at all. The very studies which provide the strongest arguments for the situational nature of leadership also supply the strongest evidence that leadership patterns as well as non-leadership patterns of behavior are persistent and relatively stable. (Stogdill, 1948, p. 65, as cited in Zaccaro, 2007, p. 10)

Unwavering interest in the topic of trait theory is evidenced by a recent search on the key term "traits" in *The Leadership Quarterly*; 378 articles were published between 1991 and 2010.

Leadership in Education

Much of the research related to leadership traits has been conducted in fields other than education (Leithwood, Harris, & Hopkins, 2008). This study contributes to the gap in the scholarship of traits in educational leadership. My research focuses on leadership in the public schools of South Carolina. One might ask, then, "What do we know about such leadership, in particular what do we know about the principalship?" As discussed in Chapter 1, Leithwood and Riehl (2003) provided an answer to this question with five claims. Since the release of those five claims, Leithwood et al., (2008) have further addressed the issue of successful school leadership. Based on a review of literature and what they term "robust empirical evidence," they made the following seven claims about successful school leadership:

1. School leadership is second only to classroom teaching as an influence on pupil learning.
2. Almost all successful leaders draw on the same repertoire of basic leadership practices.
3. The ways in which leaders apply these basic leadership practices – not the practices themselves – demonstrate responsiveness to, rather than dictation by the contexts in which they work.

4. School leaders improve teaching and learning indirectly and most powerfully through their influence on staff motivation, commitment, and working conditions.
5. School leadership has a greater influence on schools and students when it is widely distributed.
6. Some patterns of distribution are more effective than others.
7. A small handful of personal traits explains a high proportion of the variation in leadership effectiveness. (Leithwood et al., 2008, pp. 27-28)

Of particular interest to the present study are claims two and seven. In the second claim, Leithwood et al. (2008) compared the practices of successful school leaders to the taxonomy of managerial behaviors outlined by Yukl (1989). There are four behaviors associated with leadership: building vision and setting directions, understanding and developing people, redesigning the organization, and managing the teaching and learning program (Leithwood et al. 2008, p. 30). In each of these four behaviors, one can see footprints of traits in the leadership of principals. In the seventh claim, Leithwood et al. pointed out that although little research has been conducted within schools, substantial research has been conducted in the private sector concerning the traits of leaders. They referenced the importance of leaders being open-minded, flexible, resilient, and optimistic.

One need only look at the revised 2008 Interstate School Leader Licensure Consortium (ISLLC) standards to see traits that are needed by effective 21st century principals. The ISLLC standards are used throughout the school systems of the United

States. They "provide high-level guidance and insight about the traits, functions of work, and responsibilities they [states] will ask of their school and district leaders" (ISLLC 2008, p. 5). The ISLLC Standards support the need for cognitive abilities, motives and values, personality, problem-solving, social appraisal skills, expertise and tacit knowledge, and sensemaking.

Standard 1 requires cognitive abilities to develop, articulate, and implement a vision that is shared and supported by all stakeholders. Other functions of Standard 1 include collecting and using data, and monitoring and evaluating progress. Cognitive abilities are required for these functions as well. Standard 2's functions of nurturing and sustaining school culture and instructional programs require expertise and tacit knowledge among principals. As part of the nurturing and sustaining process, principals must maximize time spent on quality instruction, supervise the instructional program, and create personalized learning environments for students. In addition to expertise and tacit knowledge, these responsibilities require problem solving and sensemaking.

Problem solving and sensemaking are also evident in the tasks associated with both Standard 3 and Standard 4. In Standard 3, the principal is expected to manage the school, the daily operations of the building, and the resources at hand. In order to "obtain, allocate, align, and efficiently utilize human, fiscal, and technological resources" a leader must certainly be a good problem-solver (ISLLC 2008, p. 14). One aspect of problem solving involves collaboration with stakeholders, as indicated in Standard 4. In order to collaborate, build, and sustain the positive relationships with stakeholders as outlined in

Standard 4, a principal must communicate and interact with stakeholders. Such exchanges certainly utilize a principal's personality and social appraisal skills.

Standard 5 and Standard 6 further define the key traits of a principal. Standard 5 calls for integrity, fairness, and ethics. Without question, this standard emphasizes the importance of motives and values among educational leaders, while Standard 6 emphasizes the need for social appraisal skills and sensemaking. Standard 6 calls for principals to understand, respond to, and influence their political, social, economic, legal, and cultural environments.

Intelligence and Personality

Over the years, two particular attributes, intelligence and personality, have been central focuses of interest in trait theory. Intelligence, or cognitive abilities, includes one's general intelligence, one's creative reasoning, and ability to problem-solve. Society places much value on the cognitive abilities of a person, particularly a person in a leadership position (Judge, Colbert, & Ilies, 2004). Prior to the 2000 presidential election, for example, "90% of Americans responded that understanding complex issues was extremely or very important in determining for which candidate they would vote" (Judge et al., 2004, p. 542).

Lord, De Vader, and Alliger (1986) reviewed results on intelligence found in Mann's (1959) and Stogdill's (1948) work. In Stogdill's work, Lord et al. noted that, in 23 studies, correlation between intelligence and leadership was as high as .9 and averaged .28. "Clearly, there was a significant trend indicating that leadership and intelligence

were associated" (Lord, De Vader, & Alliger, 1986, p. 404). In reviewing Mann's work, Lord et al. found that 88% of the studies yielded a positive relationship between intelligence and leadership. "From a theoretical viewpoint, there are many reasons to believe that intelligence is related to leadership" (Judge, et al., 2004, p. 543). Judge et al. cited a 1998 review by Schmidt and Hunter in which intelligence was found to be a predictor of general job performance. They also noted the findings of Lord, Foti, and De Vader (1984) in reference to leadership categories. Lord et al. (1984) found that intelligence was an attribute in 10 of 11 leadership categories. Of special interest to this study is the fact that education was among the categories examined, thus lending support to my earlier assertion that schools need leaders who are intelligent, particularly given that these establishments are tasked with developing the minds of students.

More recently, Zaccaro et al. (2004) reviewed the research related to cognitive abilities. They cited numerous studies from 1990 – 1999 that substantiate claims that cognitive abilities are related to leader emergence and performance. "Taken together, these studies continue to support the consistent finding that leaders generally possess higher intelligence than do nonleaders" (Zaccaro et al., 2004, p. 110). Measures of cognitive abilities have ranged from mental ability test scores (Morrow & Stern, 1990) to responses to role-playing exercises (Kemp, Zaccaro, Jordan, & Flippo, 2004) to creative thinking and creative writing skills (Connelly, Gilbert, Zaccaro, Threlfall, Marks, & Mumford, 2000). Zaccaro et al. (2004) linked creativity and divergent thinking with cognitive abilities; Judge, Bono, Ilies, and Gerhardt (2002) linked divergent thinking to

the Big Five Personality Scale factor of Openness (particularly to being broad minded and curious). In short, cognitive abilities and Openness are often used synonymously.

Like intelligence, personality has been studied numerous times with respect to its relevance to leadership; however, inconsistent findings have plagued this trait:

> One of the biggest problems in past research relating personality to leadership is the lack of a structure in describing personality, leading to a wide range of traits being investigated under different labels. As Hughes et al. (1996) noted, 'the labeling dilemma made it almost impossible to find consistent relationships between personality and leadership even when they really existed' (p. 179). (Judge et al., 2002, p. 766)

When one thinks of personality, one often thinks of two types of personalities: extrovert or introvert; however, these adjectives are only the tip of the iceberg with regard to personality.

Today there is increasing acceptance of a five-factor model of personality and of the idea that it may describe leadership personality traits—the Big Five (Judge et al., 2002). The factors are Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. The Big Five, taken together, has been shown to have significant multiple correlations with leadership, R = .48 (Judge et al., 2002). Taken individually, these factors are each reasonably strong predictors of leadership. The strongest of the individual correlations are Extraversion and Conscientiousness: Extraversion correlates with leadership at a value of R = .31, and Conscientiousness correlates with leadership at a value of R = .28 (Judge et al., 2002). Other researchers have also found support for

correlation between personality and leadership. In their review of Mann's and Stogdill's work, Lord et al. (1986) stated that "personality traits are associated with leadership perceptions to a higher degree and more consistently than the popular literature indicates" (p. 407).

Cognitive intelligence and personality traits are also an integral part of a line of research about a concept referred to as emotional intelligence. This line of study is concerned with how leaders process emotions and emotional information. Côté et al. (2010) conducted two studies to examine the emotional intelligence of leaders in small groups. Using hierarchical linear modeling, Côté et al. found that emotional intelligence accounted for 13.07% of the variance in leadership emergence (leadership by an informal leader) after controlling for the Big Five personality traits and for gender. In a second but related study, Côté et al. (2010) added cognitive intelligence and self-monitoring as controls. Again, they found that emotional intelligence was positively related to leadership emergence; the explained variance dropped but still explained 5.29%.

WICS Model of Leadership

Sternberg's WICS model of leadership (2008) adds a slightly different perspective to recent scholarship on emotional intelligence. "WICS is an acronym that stands for wisdom, intelligence, and creativity, synthesized. The approach attempts to show how successful leadership involves the synthesis of the three qualities" (Sternberg, 2008, p. 360). This model incorporates pieces of behavioral, contingency, situational,

transformational, and trait theories. Of interest to the present study is the portion of the model related to trait theory.

The trait portion of the model overlaps with Zaccaro et al.'s (2004) model. Zaccaro et al.'s model is discussed in more detail below, but for now, it is important to know that the model explains leadership in terms of distal and proximal traits. According to Zaccaro et al. (2004), the distal attributes include personality, cognitive abilities, and motives and values; the proximal attributes include social appraisal skills, problem solving, expertise and tacit knowledge. Sternberg's WICS model also includes these distal and proximal attributes; however, they are grouped differently.

The first component of WICS, wisdom, includes a portion of the attribute Motives and Values from Zaccaro et al.'s (2004) model.

> Wise leaders do not look out just for their own interests, nor do they ignore these interests. Rather, they skillfully balance interests of varying kinds, including their own, those of their followers, and those of the organization for which they are responsible. (Sternberg, 2008, p. 360)

According to Sternberg, the balancing act described above is indicative of one's values. The second component of WICS, intelligence, includes several additional elements from the Zaccaro et al. (2004) model. Sternberg, like Zaccaro, argued that cognitive abilities, social appraisal skills, tacit knowledge, and problem solving are all included in the "I" portion of his model. Lastly, he stated that the creativity component of WICS includes the personality and motivation portions of Zaccaro et al.'s (2004) model. In conclusion, Sternberg described his model as being empirically testable and that it comes closer to

"capturing the dimensions that are important [to leadership]" than other models (2008, p. 369).

Bright and Dark Sides of Traits

One of the most recent research trends in trait theory categorizes leadership traits as either "bright" or "dark." Society is typically accepting of leaders who possess bright traits and often critical of leaders who have dark traits (Judge et al., 2009). Judge et al. (2009) identified eight bright traits. These traits include conscientiousness, extraversion, agreeableness, emotional stability, openness to experience, core self-evaluations, intelligence, and charisma. Judge et al. (2009) also identified four dark traits: These included narcissism, hubris, social dominance, and Machiavellianism. The significance of this work is its discussion of the "other" sides of these bright and dark traits. Judge et al. (2009) point out that the extreme expression of a bright trait can be detrimental to a leader; similarly, the moderate expression of dark traits can prove beneficial to a leader.

For example, narcissism is positively associated with charismatic leadership (DeLuga, 1997) and positively related to the number and size of corporate acquisitions by CEOs (Chatterjee and Hambrick, 2007). According to Zuckerman and O'Loughlin (2006), leaders who possess hubris tend to convey power and strength in times of difficulty, all the while inspiring their followers. Socially dominant leaders appear competent and continuously strive for achievement and control (Cozzolino & Snyder, 2008), thus these individuals are more likely to emerge as leaders or to be placed into leadership roles (Foti & Hauenstein, 1993; Son Hing, Bobocel, Zanna, & McBride,

2007). Similarly, Machiavellian leaders are highly motivated to lead (Mael, Waldman, & Mulqueen, 2001) and are charismatic, flexible, and strategic thinkers. Simonton (1986) noted that Machiavellians often serve many years of public service at the national level.

Just as there are bright sides to dark traits, there are also dark sides to bright traits. For example, highly conscientious leaders may be considered perfectionist and inflexible (Hogan & Hogan, 2001). These leaders do not handle change well, nor do they perform well under stress. Such leaders are not typically considered charismatic or inspirational (Bono & Judge, 2004). Extraverted individuals might be difficult to please. These leaders often make hasty decisions and change direction before a situation has had time to play out. Such leaders may over-estimate their capabilities (Hogan & Hogan, 2001). Leaders who are highly agreeable tend to avoid controversial decisions, and, therefore may be best suited for positions where the status quo is acceptable (Judge et al., 2009).

Emotional stability is considered by society to be a bright trait (Judge et al., 2009), but this trait can be a double-edged sword. While it is positive to have a leader, who remains calm in stressful situations, this same calmness, and stability might be misinterpreted. “Failing to express emotion in a given situation could be interpreted as apathy or disinterest” (Judge et al., 2009, p. 868). Similarly, being open to experiences can be dual edged. Leaders who are open to experiences are “creative, intelligent, and reflective,” yet alienation may occur between the leaders and the followers; often followers prefer simple, clear directions (Judge et al., 2009, p. 869).

Another bright trait identified by Judge et al. (2009) was core self-evaluations (CSE). CSE essentially is one’s self-confidence and self-value. Like emotional stability,

society accepts this trait as an asset for leaders, however, if taken to the extreme (self-love and overconfidence), CSE can have the same effects associated with the dark traits of narcissism and hubris. This extreme expression of CSE is referred to as hyper-CSE (Hiller and Hambrick, 2005). Evidence of hyper-CSE in leadership includes hampered objectivity in decision making and acting in one's own best interest rather than that of the group.

As with the other bright traits, it is considered an asset for a leader to be intelligent; however, Judge et al. (2009) indicated that an extremely high IQ might cause followers to think of the leader as atypical. Both Bass (1990) and Stogdill (1948) indicated that problems might arise if there is a large gap between the leader's intelligence and the intelligence of the group members. Leaders with high IQs may also have difficulty making quick decisions in times of urgency (Judge et al., 2009).

The final bright trait with a dark side is charisma. Charismatic leaders "are skilled and animated public speakers" and they deliver powerful speeches that use "rhetoric, imagery, anecdotes, and fantastic claims" (Judge et al., 2009, p. 869). The down side of such moving speeches is the manipulation and exploitation that also occurs. Unfortunately, some charismatic leaders use their power for personal gain.

Another study that extends research on dark leader traits is by Schaubroeck, Walumbwa, Ganster, and Kepes (2007). They examined the traits of hostility and negative affectivity (NA). These two traits characterize what are termed "toxic" leaders; such leaders are found in work environments where subordinates experience excessive demands and insensitivity from the leader (Frost, 2004). Schaubroeck et al. used

hierarchical linear modeling to test hypotheses about the interactions between leaders and subordinates. There findings reported a strong relationship between "leaders' hostility and/or trait NA and subordinates' anxiety, somatic complaints, depression, dissatisfaction, organizational commitment, and turnover intentions" (Schaubroeck et al., 2007, p. 246). Not surprising, these dark, destructive leader traits negatively influence the well-being of subordinates. Research such as that of Schaubroeck et al. differs from most trait research in that it focuses on the side of leadership that many prefer to ignore.

Criticism of Trait Theory

These present-day forays into trait theory are not without criticism. According to Andersen (2006), "no leadership theory can logically and empirically convincingly present the reasons why some leaders succeed while others fail" (p. 1084). He argued that personality is related to behavior of all persons, not just the behavior of those in leadership positions. For example, he noted that Kirkpatrick and Locke (1991), who examined the relationship between personality and behavior, claimed that traits matter, yet they failed to provide empirical evidence. In his review of contemporary research as well as the classical works of trait theory, Andersen (2006) drew the following conclusions:

1. on scientific ground no trait or traits are found which are universally related to leadership,
2. traits of leaders cannot explain organizational effectiveness,

3. there is a relationship between personality and leader behavior as between personality and behavior in general, and finally
4. leadership appears to have a minor impact on organizational effectiveness. (p. 1089)

Assumptions Underlying Trait Theory

The trait approach to leadership is based on certain theoretical assumptions about human nature. The first assumption derives from evolutionary theory and evolutionary psychology. According to this line of thought, "all species characteristics arise from a process of mutation and selection" (Judge et al., 2009, p. 857). Judge et al. (2009) gave physical examples of opposable thumbs and the brightness of male bird feathers as mutations that have aided in survival. Likewise, psychological traits conducive to leadership have developed from mutation and selection. For example, the traits of conscientiousness and agreeableness emerged because they aid humans with survival and communal attachments; they also contribute to the emergence of leadership. Consequently, there are certain traits that promote leadership and fitness; these trait separate leaders from non-leaders (Judge et al., 2009).

The second assumption is rooted in behavioral genetics. According to Turkheimer (2000), all behavioral traits are heritable, so in part leaders are born. "To a significant degree, leadership is rooted in individual genes, namely their genetic predispositions… that predispose them to seek leadership positions, to be selected by others into such positions, and to thrive in such positions once selected" (Judge et al., 2009, pp. 860-861).

Judge et al., cite several studies (Arvey, Rotundo, Johnson, Zhang, & McGue, 2006; Johnson, Vernon, Harris, & Jang, 2004; Johnson, Vernon, McCarthy, Molso, Harris, & Jang, 1998) that showed that 30-60% of leadership traits are heritable. Approximately half of the variance in personality is heritable; the other half seems to be derived idiosyncratically (Bouchard & Loehlin, 2001; Turkheimer, 2000). Beyond influencing one's personality, genes also interact with the environment. According to Judge et al. (2009), a person's genes cause him or her to select or be selected into environments with persons possessing similar genes. Judge et al. compare the relationship between genes and the environment to a leaky basement. They reference a quote by Olson, Vernon, Harris, and Jang (2001, pp. 845-846):

> Asking how much a particular individual's attitudes or traits are due to heredity versus the environment is nonsensical, just like asking whether a leaky basement is caused more by the crack in the foundation or the water outside. In a very real sense, genetic effects are also environmental because they emerge in an environment, and environmental effects are also genetic because they are mediated by biological processes. (as cited in Judge et al., 2009, p. 860)

The final assumption about human nature derives from socioanalytic theory. The assumption is that people live in groups, and these groups are hierarchical in nature (Hogan & Holland, 2003). According to Judge et al. (2009), socioanalytic theory states that humans possess motives for getting along or getting ahead. Barrick, Stewart, & Piotrowski (2002) argued that motives and personality are linked, so "agreeable individuals are motivated to get along with others, and conscientious and extraverted

individuals are motivated to get ahead" (Judge et al., 2009, p. 861). As a result, leaders' personalities lead them to get along with others or to try to get ahead of others (or sometimes both). To reference the previous discussion of bright and dark leader traits, one would consider the ability to get along a bright leader trait, while the desire to get ahead would be considered a dark leader trait. As with the other bright and dark traits, motive may serve leaders well or work to their detriment, depending on the situation (Judge et al., 2009).

Research Model for this Study

"Writings from antiquity to the first part of the 20th century attest to the enduring and compelling notions that leaders have particular qualities distinguishing them from nonleaders, and that these qualities can be identified and assessed" (Zaccaro et al., 2004, p. 102). According to Zaccaro et al., the meaning of the term "trait" has long been an issue of confusion in literature related to leadership. "*Leader traits* can be defined as relatively coherent and integrated patterns of personal characteristics, reflecting a range of individual differences, that foster consistent leadership effectiveness across a variety of group and organizational situations" (Zaccaro, 2007, p. 7). This definition has three caveats:

1. Traits exist as integrated constellations rather than in isolation.
2. The idea of traits goes beyond ones personality. While personality is one attribute, other personal attributes must also be considered.

3. Traits are relatively enduring and produce cross-situational stability in positions of leadership (Zaccaro, 2007).

In a review of literature from 1990 to 2003, Zaccaro et al. identified six categories of leader attributes which have "substantial empirical support" (2004, p. 118). These categories are cognitive capacities, personality, motives and needs, social capacities, problem-solving skills, and tacit knowledge. While various studies have been conducted and articles have been written about these attributes individually, I have found no study that has attempted to explore all of them at once with respect to the field of educational leadership, nor have I found studies that do so using a sophisticated method of analysis such as structural equation modeling (SEM).

U.S. Army Study

The most similar study to the present study is that of Mumford, Zaccaro, Harding, Jacobs, and Fleishman (2000). They conducted a study involving U.S. Army officers that was used by Zaccaro et al. (2004) along with scholarship to build their research model. Mumford et al. (2000) proposed a mediated model of leadership based on cognitive abilities (general and crystallized), motivation, and personality, which were conceptualized as contributing to problem solving skills, social judgment skills, and knowledge. The model (see Figure 2.1) further proposed that problem solving skills, social judgment skills, and knowledge were contributing factors to problem solving and performance. Hence, there were mediating traits (problem solving skills, social judgment skills, and knowledge) between cognitive abilities, motivation, and personality and leader

outcomes (problem solving and performance). Mumford and his colleagues posed three hypotheses:

1. Constructed response measures of key leader capabilities including complex problem-solving skills, social judgment skills and leader knowledge, are expected to account for significant variance in two leadership criterion measures—leader achievement and quality of problem solutions. Each constructed response measure is expected to account for unique variance in these criteria.
2. Constructed response measures of leader problem-solving skills, social judgment skills and knowledge are expected to account for significant variance in problem-solving quality and leader achievement in addition to the variance accounted for by more traditional leader attributes including general cognitive ability, motivation, and personality.
3. It is expected that results will support a mediated model of leadership, where problem-solving skills, social judgment skills and knowledge mediate the relationship of general cognitive abilities, motivation and personality to leader performance. Specifically, the covariation between cognitive abilities, motivation, personality, and leader performance is expected to diminish when problem-solving skills, social judgment, and knowledge are controlled. (Connelly et al., 2000, p. 69)

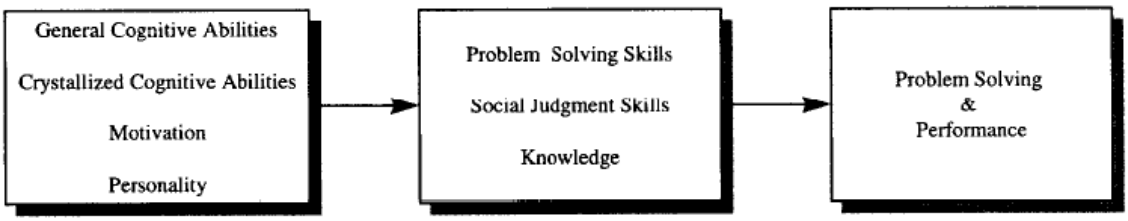


Figure 2.1

Aspects of Capabilities Model of Leadership (Connelly et al. 2000, p.68)

Two samples, taken from 1,807 Army officers, were used in this study. Sample A consisted of 348 officers; sample B consisted of 373 officers. Constructed response measures were used to measure problem-solving skills, solution constructions skills, and social judgment. A sorting exercise was employed to measure knowledge. Verbal reasoning was measured using a sub-test of the Employee Aptitude Survey. The Consequences-A test measured divergent thinking skills. The Alternative Headlines Test was used to measure writing skills. Leadership criteria for this study included a self-report biodata measure of career achievements and effective problem solving or solution quality to the cued and un-cued leadership problems.

Connelly et al. tested three hypotheses using multiple regression analysis. Hierarchical regression analysis was also used to test H1 and H2. Their results confirmed part of H1, "that constructed response measures account for variance in solution quality" (Connelly et al., 2000, p. 74). H2 was not confirmed in its original form and was therefore revised, omitting the measures for motivation and personality. The revised H2 was confirmed, which indicated that the "constructed response measures account for unique variance over and above that which was accounted for by the cognitive variables"

(Connelly et al., 2000, p. 77). Mediation analyses were conducted to test H3. The results showed that a fully mediated model of leadership was not supported and thus H3 was not supported. Evidence for partial mediation was found. Three key findings were identified from this study.

> The results provide additional validity evidence for constructed response measures of complex problem-solving skills, social judgment, and leader knowledge given that they concurrently predicted two leadership criteria—leader achievement and quality of problem solutions. …Second, it appears that these types of leader skills and knowledge contribute something to the leadership criteria beyond what is contributed by general cognitive ability, personality, and motivation. …Last it appears that leader skills and knowledge partially mediate the relationship between more traditional leader traits and the leadership criteria. (Connelly et al., 2000, p. 81)

Prior to this large-scale military study, Zaccaro, White, Kilcullen, Parker, Williams, and O'Connor-Boes (1997) had tested the same model as the one tested by Mumford et al. (2000). One of the key differences between the two studies was the makeup of the sample; Zaccaro et al.'s (1997) sample consisted of 543 Army civilian leaders. Two other key differences were that knowledge was not included in the Zaccaro et al. (1997) set of leader skills, nor were tests for mediation conducted. The measurement batteries also differed from those used in the Army officer study, as did the content of the measures used to establish relevancy. Despite the obvious differences between the two studies, they were actually quite similar with regard to the models and types of leader characteristics measured. The findings of both of these studies provide some support for the model proposed by Mumford et al. (2000). "The Army study emphasizes the importance of creative thinking, complex problem-solving skills, and social judgment skills, while the civilian study serves as a reminder that other leaders

attributes, such as personality and motivation are critical to a leader's success" (Connelly et al., 2000, p. 84).

In conjunction with the previously discussed Army officer study, Mumford, Zaccaro, Johnson, Diana, Gilbert, and Threlfall (2000) conducted a study of the types of leaders present at the various levels of Army officers. Using the same sample of officers, they examined whether certain types of leaders held officer positions at junior and senior levels. As in the previous Army study, the measures were open-ended and lengthy, requiring significant time to complete. The participants completed personality tests, ability tests, open-ended questions on military problems, career achievement items, and finally a set of open-ended scenarios. The analysis was completed using a Ward and Hook clustering. This process identified seven types of leaders among the officers:

1. Concrete Achievers – concrete, pragmatic, achievement-oriented
2. Motivated Communicators – extroverted, responsible, dominant, and achievement motivated
3. Limited Defensives – low reasoning and written ability
4. Disengaged Introverts – lacking motivation
5. Social Adaptors – intelligent, open, extraverted
6. Struggling Misfits – lacking ability and openness
7. Thoughtful Innovators – motivated, capable, and creative (Mumford et al., 2000, pp. 122-124)

These findings indicate that certain types of leaders are especially likely to be present in senior level positions. For example, 40% of the senior level officers were categorized as

Motivated Communicators, while 26% were categorized Thoughtful Innovators, 11% Concrete Achievers, and 10% Social Adaptors (Mumford et al., 2000).

Distal and Proximal Traits

Although neither of the Army studies nor the civilian study termed them as such, the leader traits they examined actually fell into one of two categories – distal and proximal. Accordingly, Zaccaro et al. (2004) enhanced the original Army model by separating traits into these categories. Distal attributes are traits with which a person is born. They tend to mold and influence one's actions from a distance. Proximal attributes are traits that are developed over time and tend to be more situational specific; they tend more directly to influence one's actions. Working together, these attributes were hypothesized by Zaccaro et al. to influence the leadership processes.

Chen et al. (2000) conducted research on the relationship between trait-like differences, state-like differences, and performance. Trait-like differences are the general equivalent of distal traits, while state-like differences are the equivalent of proximal traits. In particular, Chen et al. (2000) tested relationships among cognitive ability, general self-efficacy, and goal orientation (trait-like differences) and state anxiety, task-specific self-efficacy, and goals (state-like differences) and learning performance. "Trait-like individual differences such as cognitive ability and personality characteristics are not specific to a certain task or situation and are stable over time. In contrast, state-like individual differences… are specific to certain situations or tasks and tend to be more

malleable over time" (Chen et al., 2000, p. 835). In relation to one's performance, trait-like differences are distal whereas state-like differences are more proximal.

Chen et al. (2000) completed two studies in an effort to replicate their findings. Study 1 consisted of 316 undergraduates and Study 2 consisted of 323 undergraduates. Study 2 differed from Study 1 in that different measures were used to measure goal orientation and state anxiety. Chen et al. (2000) found that the relationships were complex among trait-like differences, state-like differences, and performance. Their findings suggested "that cognitive ability and trait-like motivational constructs, particularly GSE [general self efficacy], can be used to identify individuals who will perform effectively over time and in different situations" (Chen et al., 2000, p. 844).

Model of Leader Attributes

According to Zaccaro (2007), the influences of distal attributes on leader processes are mediated by proximal attributes. In explaining this proposition, he pointed out that traits go beyond personality attributes and include "motives, values, cognitive abilities, social and problem-solving skills, and expertise" (p. 8). He argued that "leader traits are not to be considered in isolation but rather as integrated constellations of attributes that influence leadership performance" (p. 8). Zaccaro et al. (2004) put forth a model that takes into consideration these various attributes, the manner in which the attributes are integrated, and the mediation above. In their model, distal attributes are defined as cognitive abilities, personality, and motives and values; these individual distal attributes are represented as overlapping circles with an arrow pointing from them to the

relevant proximal attributes (see Figure 2.2). The model's proximal attributes are defined as social appraisal skills, problem-solving skills, and expertise and tacit knowledge; like the distal attributes, the individual proximal attributes are represented as overlapping circles with an arrow pointing from them to Leader Processes. Although Zaccaro et al. (2004) did not test their proposals, they put forth five propositions for future research (see Figure 2.2):

1. Leader traits contribute significantly to the prediction of leader effectiveness, leader emergence, and leader advancement. (p.119)
2. Leadership is best predicted by an amalgamation of attributes reflecting cognitive capacities, personality orientation, motives and values, social appraisal skills, problem-solving competencies, and general and domain-specific expertise. (p. 120)
3. The constellation of critical leader attributes includes traits that promote a leader's ability to respond effectively and appropriately across situations affording qualitatively different performance requirements. (p. 121)
4. Cognitive abilities, personality, and motives will influence leadership processes and outcomes through their effects on social appraisal skills, problem-solving competencies, expertise, and tacit knowledge. Situational or contextual influence will be manifested mostly in the nature and quality of appropriate skills, in knowledge, and by defining the leadership processes and behaviors required for success. (p. 121)

5. A leader's cognitive capacities, personality, motives, and values are necessary but not sufficient in isolation to influence growth and utilization of proximal skills and expertise; the influence of these distal traits derives from their joint application. A leader's social appraisal skills, problem-solving competencies, expertise, and tacit knowledge are necessary but not sufficient in isolation to influence the display and quality of particular leadership processes; the influence of these proximal traits derives from their joint application. (p. 123)

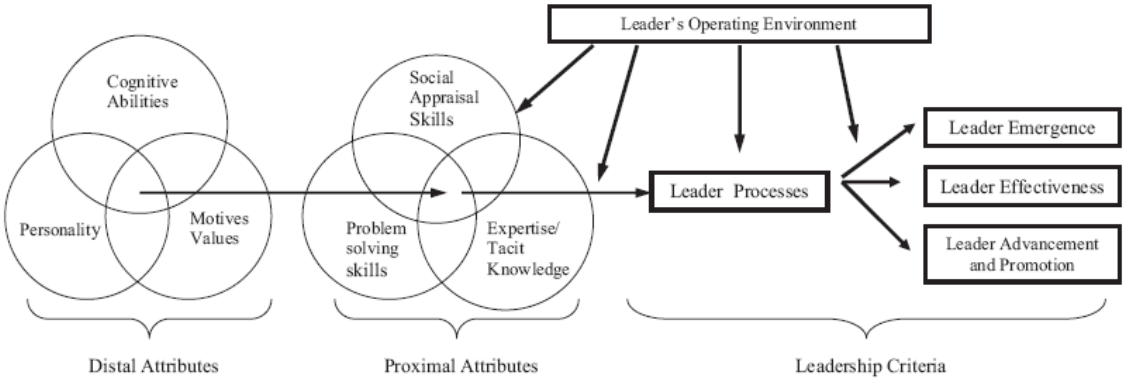


Figure 2.2

A Model of Leader Attributes and Leader Performance (Zaccaro et al., 2004, p. 122)

Distal traits. I will focus on the distal and proximal traits identified by Zaccaro et al. (2004) in the analysis presented in subsequent chapters. As mentioned above, distal traits include cognitive abilities, personality, and motives and values. Extensive research has been conducted that relates cognitive abilities to leadership and personality to

leadership. Zaccaro et al. (2004) cited numerous studies from 1990 – 1999 that substantiate claims that cognitive abilities are related to leader performance (previously discussed in this chapter). A second key distal trait, personality, has been studied numerous times with inconsistent findings (also discussed above).

The third of the distal traits is motivation. One's motivation to lead (MTL) was studied by Chan and Drasgow (2001). Using confirmatory factor analysis (CFA), they confirmed that MTL can be conceptualized and measured according to three correlated dimensions. These dimensions include Affective/Identity MTL, Social-Normative MTL, and Noncalculative MTL.

1. Affective/Identity – This person prefers to lead and is outgoing, competitive, and confident.
2. Social-Normative – This person is confident and leads out of a sense of social duty.
3. Noncalculative – This person does not calculate the costs and benefits associated with leading. (Chan, Rounds, & Drasgow, 2000, p. 228)

In their research, Chan and Drasgow (2001) acknowledged that "personality, values, and past leadership experience are related to MTL both directly and indirectly through leadership self-efficacy" (p. 495).

Proximal traits. The proximal traits identified by Zaccaro et al. (2004) include social appraisal skills, problem solving, and expertise and tacit knowledge; to the list, I add sensemaking (which I discuss below). Social appraisal skills "refer to a leader's understanding of the feelings, thoughts, and behaviors of others in a social domain and

his or her selection of the responses that best fit the contingencies and dynamics of that domain (Zaccaro et al., 2004, p. 115). In a school setting, a principal encounters many students, teachers, and parents on a daily basis. Given the social interaction that coincides with these encounters, it is without question that a principal's social appraisal skills are tapped continuously. Zaccaro et al. (2004) cited several studies in which such skills have been linked to leadership.

The last three proximal traits, problem solving, expertise and tacit knowledge, and sensemaking, are intertwined. For example, possession of expertise and tacit knowledge is necessary for problem solving and sensemaking, yet problem solving and sensemaking also contribute to a leader's expertise and tacit knowledge. Zaccaro et al. (2004) argued that the application of problem-solving skills influences the attainment of tacit knowledge. Sternberg et al. (2000) conducted research involving military officers that indicated that tacit knowledge is significantly associated with leader effectiveness. Principals gain much of their knowledge and expertise from leadership preparation programs. Such leadership programs are based on state and professional standards. Darling-Hammond, Lapointe, Meyerson, Orr, and Cohen (2007) at Stanford University found support for the effectiveness of such programs in a report concerning curriculum of leadership preparation programs (ISLLC, 2008). In a school, the principal is expected to problem-solve and to have the answers to whatever situation arises. Teachers, students, parents, and district office staff expect the principal to be knowledgeable about effective practices in education, and they expect the right decisions to be made accordingly.

How does one problem-solve? A principal does so by obtaining information and then processing the information in a manner that makes sense – sensemaking. Educational leadership requires sensemaking, and so in addition to Zaccaro et al.'s six attributes, this study also analyzes sensemaking. Vroom (2007) defined leadership as "a process of motivating people to work together collaboratively to accomplish great things" (p. 18). He referenced Podolny, Khurana, and Hill-Popper's (2005) definition of leadership as "a process of 'meaning-making' among organization members" (p. 1, as cited in Vroom, 2007, p. 18).

This *meaning-making* is the same capacity that Weick (1993) discussed in the 1949 story of the Mann Gulch smokejumpers. "Sensemaking is about contextual rationality. It is built out of vague questions, muddy answers, and negotiated agreements that attempt to reduce confusion" (Weick, 1993, p. 636). Weick made a connection between sensemaking and creativity. He referenced Bruner's (1983) definition of creativity, which is "figuring out how to use what you already know in order to go beyond what you currently think" (as referenced by Weick, p. 639).

Weick, Sutcliffe, and Obstfeld (2005) described sensemaking as the ongoing review of the present events ever seeking to rationalize them. "To make sense is to connect the abstract with the concrete" (Weick et al., 2005, p. 412). Once sense is made of a situation, communication becomes crucial. It is the leader's responsibility to communicate the sense that is made to those he or she is leading.

> Sensemaking is not about truth and getting it right. Instead, it is about continued redrafting of an emerging story so that it becomes more comprehensive, incorporates more of the observed data, and is more resilient in face of criticism. (Weick et al., 2005, p. 414).

Sensemaking requires organization and labeling of the components of experiences, and appropriate action by persons placed in decision-making roles.

Just as the Mann Gulch smokejumpers struggled to make sense of their surroundings that day, school principals put forth efforts to make sense of the situations in their schools each day. As part of a larger study, Sleegers et al. (2009) explored problem-solving and sense-making abilities of principals. Their case study involved two novice school leaders in the Netherlands. In the research Sleegers et al. found that the beliefs and values developed earlier in principals' careers affected the way they problem solved and made sense of their daily work.

Demographic Identifiers

Literature suggests that certain demographic identifiers may affect leadership. Gender is one such identifier. According to Fletcher (2004), traits associated with traditional, heroic leadership are masculine while traits associated with postheroic leadership are feminine. Some of these traits include empathy, community, and collaboration and their enactment by women is referred to as the "female advantage" (Fletcher, 2004). In leadership there is a gender/power lens through which one does and interprets actions. "We convey our gender identity in the way we respond and react to others or in how we choose to do our work" (Fletcher, 2004, p. 652). According to Fletcher, leadership is not gender neutral; the body in which leadership is carried out does matter (2004).

Literature also suggests that experience influences leadership. According to Mumford et al. (2000), the skills of leaders develop over time, in a progressive manner. "Expertise develops slowly over periods of ten years or more" (Mumford et al., 2000, p. 89). Goldring, Huff, Spillane, and Barnes (2009), studied principals and the correlation between expertise and years of experience. Like Mumford et al., they found a positive and significant correlation between perceived expertise and a principal's years of experience. In addition, Spillane, White, and Stephan (2009) "found some distinct differences between expert and aspiring principals in their problem-solving processes" (p. 139).

In addition to gender and years of experience is the demographic identifier of level. In an Army study, Mumford et al. (2000) indicated that certain types of leaders are more prevelant among particular levels (junior-level, mid-level, and senior-level) of leadership. In their study, junior-level leadership positions included second lieutenants, first lieutenants, and junior captains; mid-level position included senior captains and majors, while senior-level positions included leiutenant colonels and colonels. Mumford et al. (2000) identified seven types of leaders among the various levels of leadership and that some of those leader types were more prevalent in senior-level positions. This study will couch the concept of leadership level in terms of grade levels of schools. Since leadership differed in the military study at various positions, perhaps the same is true among principals of different grade levels (elementary, middle, high, etc.).

Race has likewise been found to differentially affect the performance of leadership (Ospina & Foldy, 2009). According to Ospina and Foldy, race-ethnicity is

central to how we define ourselves. “If society, communities and individuals are all significantly informed by race, then leadership must be as well” (p. 876). Ospina and Foldy cite conflicting research about the ratings of leaders from different races. In some instances white managers were rated more positively while in other situations they were rated more negatively. Other research has examined supervisory styles, interactions, and legitimacy issues of leaders of different races. Again, according to Ospina and Foldy (2009) the literature is mixed and somewhat dated. For the sake of causal exploration, race and the previously described demographic identifiers are included in this study.

Summary

Given the continuing interest in trait theory and the directions for future research outlined by Zaccaro et al. (2004) and Zaccaro (2007), my study explores the relationship between distal and proximal attributes and the decisions and actions of principals. I do not include leadership outcomes (an element of Zaccaro et al.'s 2004 model) among the hypotheses because my intent is only to determine if the proximal and distal relationship model is a valid description of leadership traits in an educational setting (Hypothesis 1 and 2). If not, then I will explore the constructed reality in which the principals of my study define leadership in schools (Hypothesis 3). Therefore, three hypotheses are proposed:

- Hypothesis 1: Distal traits are comprised of items measuring personality, cognitive abilities, and motives and values.

- Hypothesis 2: Proximal traits are comprised of items measuring social appraisal skills, problem-solving, expertise and tacit knowledge, and senesemaking.
- Hypothesis 3: Traits related to leadership include Confidence, Makes A Difference, Perception Leader, Incompetent, and Lacks Social Skills.

CHAPTER THREE

METHODS

This study explores the impact of leader attributes on the principalship. Attributes studied include personality, cognitive abilities, motives and values, problem-solving skills, social appraisal skills, sensemaking, and expertise/tacit knowledge. These data were analyzed using exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modeling (SEM). The survey consisted of 69 questions with Likert scale responses and 5 demographic questions, making 74 questions total.

Sample

Participants were recruited from public school principals in South Carolina. These principals were selected by alphabetizing the list of school districts, selecting the first district on the list, and selecting every other district after that (Jaeger, 1984). This process identified 42 districts consisting of 436 schools for participation in the study. Three school districts declined and 15 did not respond to correspondence. Twenty-four of these districts gave permission for their principals to be surveyed, so informational letters along with copies of the survey were mailed to 307 principals. Postal mail and e-mail addresses were obtained from the South Carolina Department of Education web site and from individual school district and school web sites. Six of the 307 envelopes were returned as undeliverable to principals. One of the 24 agreeing districts later withdrew from the study, thus removing 18 potential participants from the pool of 307 principals who were contacted.

Variables

The variables employed in this study are taken from responses made to a survey regarding persons in the principalship. The survey was completed by principals about the principalship. The survey was not a self-evaluation but rather a measure of how principals viewed the principalship in general. Forty-four questions from the Big Five personality measures produced by Berkley Personality Lab (John, Naumann, & Soto, 2008; John, Donahue, & Kentle, 1991; Benet-Martinez & John, 1998) are used to measure cognitive abilities, personality, and social skills. I added original questions measuring motives and values, problem solving, expertise and tacit knowledge, and sensemaking. To each of the survey's questions, principals responded on a scale of 1 to 5 (Disagree Strongly to Agree Strongly). Demographic variables were also measured. These variable included number of years as an educator, number of years as an administrator, level of school at which the respondent is principal, gender, and race. A complete list of the variables from the survey is included in the appendix.

Development of the Survey

As mentioned above, the survey used for this research is a combination of the Big Five Measures, a measure of personality dimensions produced by Berkley Personality Lab (John, Naumann, & Soto, 2008; John, Donahue, & Kentle, 1991; Benet-Martinez & John, 1998) and additional questions that I added. Initially I intended to use the measures employed by Mumford and his colleagues in their study of the U.S. Army (2000). My committee chair contacted one of the researchers from that study, Shane Connelly.

Connelly shared the questions that her team had used. The questions were open-ended military scenarios that required extensive written responses that would in turn require grading according to a rubric. Connelly suggested that I use the Big Five in my study (personal communication, September 17, 2009). With that direction, I began composing a survey that would be brief yet comprehensive for principals to complete. After a field test with friends and colleagues (persons with administrative certification but not currently employed as a principal), the present survey emerged. Sixty-nine questions with five-point Likert scale responses measured social appraisal skills, problem-solving skills, sensemaking, expertise/tacit knowledge, cognitive abilities, personality, and motives/values. Principals were asked to rate the extent to which they felt the statements pertained to persons in the principalship. Five additional questions gathered demographic information (see the appendix).

Field Test

A field test was conducted during March, April, and May 2010. Ninety-six persons completed the field test survey. Each of these persons was similar to the population to be studied in that they possessed administrative certification. The persons who participated were assistant principals, former principals/administrators, and persons with certification who had not yet held an administrative position.

Survey Administration

As noted earlier, twenty-four districts from across South Carolina gave permission for their principals to be surveyed. Postal mail and e-mail addresses were obtained from the South Carolina Department of Education web site and individual school district and school web sites in December 2009. These addresses were checked and updated throughout the spring of 2010. An informational letter along with copies of the survey was mailed to 307 principals in mid-June 2010. An ink pen was included in the packet as a token of appreciation. Six of the 307 envelopes were returned as undeliverable to principals. After the mailing of packets, one of the districts withdrew from the study thus removing 18 potential participants. In the end, 283 principals received packets inviting them to participate.

The information packet provided principals with the option of completing the survey on paper or online. Two weeks after the packets were sent out in the U.S. Mail, an e-mail was sent to the principals asking again for their participation. This reminder was sent at the end of June 2010. Surveymethods.com was used to send this e-mail reminder (this program was also used to gather online responses from principals who preferred electronic entry). This same survey web service was used two weeks later for a second reminder in mid-July 2010. Using this mixed data collection approach resulted in a response rate of 69.6%, which is unusually high for such solicitation procedures. The response was relatively equally split between the paper option and the online option.

Data Analysis

Field Test

An exploratory factor analysis (EFA) was conducted to evaluate the field test responses. An EFA may be conducted for three reasons: (1) to gain an initial idea of the structure of what is being studied, as defined by the participants, (i.e., how questions in the questionnaire group conceptually); (2) to evaluate the reliability of the questionnaire; and (3) to gain information about how the number of questions on the questionnaire might be reduced (Field, 2005). I utilized the EFA to evaluate the reliability of my questionnaire. Final decisions about (1) and (3) were made after the actual test data was collected.

An EFA provides several goodness-of-fit measures. The first of which is a Kaiser-Meyer-Olkin (KMO) value. This value is representative of the overall sampling adequacy of the survey (a measure of the degree to which the questions in the survey are internally consistent) and is the ratio of the squared correlation between variables to squared partial correlation between variables. A KMO value should lie between zero and one. A value greater than .7 or .8 indicates that the patterns of correlations are compact; so, factor analysis will yield distinct and reliable factors. Values above .6 are considered acceptable, however (Field, 2005).

More goodness-of-fit information is obtained from the anti-image matrix of covariance and correlations. This is essentially a matrix of sampling adequacies for individual items. In review of the matrix, one looks for values greater than .5 down the diagonal of the anti-image correlation matrix. The value is indicative of sampling

adequacy between a pair of variables. If the diagonal value is below .5, then one of the variables should be removed from the analysis (Field, 2005).

Another piece of information provided by the EFA is the number of factors (clusters of correlated items) embedded within the survey's questions. The factors will be identified and analyzed in the actual study; however, the number of factors from the field test data was reviewed to determine if the survey would return meaningful results. One method for determining the number of factors from the data is to examine the eigenvalues. An eigenvalue is a measure of the amount of variance that a given factor accounts for; factors with higher values are conceptually more dominant in the dataset. Kaiser's recommendation is to retain factors with eigenvalues greater than one (Field, 2005). A scree plot of the eigenvalues (eigenvalues categorized in order of size plotted against the eigenvalue's respective coefficient; this plots as a power law curve) may then be analyzed to refine the number of meaningful clusters of questions in the dataset (determined by finding discontinuities in the plotted curve).

Survey Administration

Initial analysis of the survey's 197 responses was completed using PASW/SPSS v 18. In some cases, respondents did not respond to all questions in the survey, so the surveys from those participants were removed from the analysis. An exploratory factor analysis was conducted on the remining 178 responses. All questions in the original survey were used in this phase of the analysis because I wanted to conduct final variable parsing using the responses on which final conclusions would be based.

The statistical program PASW/SPSS v 18 was used to conduct an exploratory factor analysis (EFA) on the research dataset. The same procedures used in the field test were applied and the data were parsed for ill-fitting data (based on the KMOs and the anti-imaging matrix). Additionally, once the clusters were identified (eigenvalues greater than one and scree-plot analysis), the common themes in each cluster were identified and clusters were conceptually labeled. As a result of the EFA analyses, a five-factor leadership model was identified. AMOS was then used to evaluate these results using confirmatory factor analysis (CFA).

Before conducting a CFA of the five-factor model suggested by the EFA, I tested the model proposed by Zaccaro et al. (2004). In that model, there are three distal traits, which are portrayed as latent variables: personality, cognitive abilities, and motives and values. I similarly tested the fit of the data to Zaccaro et al.'s three proximal traits, or latent variables: social appraisal skills, problem-solving, and expertise and tacit knowledge (plus my original sensemaking variable).

CFA is an *a priori* test of hypothesized clustering patterns among the observed variables (those variables represented by the survey's questions). The hypotheses are based on the EFA analysis; each cluster in the EFA was conceptually defined as described above. In CFA, clusters are called latent variables; each latent variable is defined by a subset of observed variables (survey questions). CFA tests determine how well the data fit the hypothesized latent variables (i.e., the model).

After the CFA analysis of the Zaccaro et al. model, a CFA was performed using the five-factor leadership model proposed by the EFA discussed above. As I will show in

Chapter 4, the questions from the survey that were purported to measure Zaccaro et al.'s (2004) distal and proximal traits did not fit these hypothesized latent variables. The five-factor model suggested by the EFA did, however, fit its hypothesized latents, and these latents were then analyzed using structural equation modeling (SEM).

Structural Equation Modeling (SEM) is a sophisticated data analysis procedure. It allows one to analyze causal relationships among observed and unobserved (latent) variables and provides estimates for improving the causal model under study. A hypothesized path diagram modeling the causal structuring among observed and latent variables is first drawn in AMOS. These variables are identified as either exogenous latent variables or endogenous latent variables. Exogenous latent variables are independent (they are not caused by any other variable in the model), but they are hypothesized to affect other latent variables. Endogenous latent variables are dependent and are affected by other latent variables. SEM returns results that can be used to revise the model (e.g., unexpected cross-postings, correlated error terms, and non-significant paths among variables). The final model produces beta coefficients for each of the causal paths among the model's variables as well as measures of explained variation. The beta coefficients are interpreted as measures of how much an outcome variable would increase given a one standard unit increase in the causal variable (Byrne, 2010).

Generalizability of Results

The results in this study are generalizable to the public school principals of South Carolina, and with care, could be applied to the principals of schools in other states. The

respondents included principals from all grade levels; therefore, the results are not limited to principals of one particular school level. For this study, principals completed the survey about the principalship in general. With minor modifications, persons at the district level or classroom teachers could complete the survey about the principalship, as well. In addition, with appropriate adjustments, the survey could be applied to leaders in non-educational settings.

CHAPTER FOUR

FINDINGS

"Exceptional leaders not only draw on their strengths, but also accept their weaknesses and develop a capacity to cope. …Administrators who succeed hold positions that match their talents and their personalities" (Murphy, 2000, p. 119). This statement is certainly true of the principals who completed the survey associated with this study. In responding to the questions posed to them, the principals answered in a manner that acknowledged both the bright and dark sides of leadership.

Principals were asked in this study to respond to statements designed to measure traits of leaders. Each respondent provided a rating for each statement on a five-point Likert scale. The expected traits were personality, cognitive abilities, motives and values, problem-solving, expertise and tacit knowledge, sensemaking, and social appraisal skills. Participants were recruited from public schools in South Carolina. In the end, responses were expected from 283 principals, should one hundred percent participation have occurred. An information packet was mailed to principals in which they were given the option of completing the survey on paper or online. Using this mixed method sampling approach was beneficial, as 69.6% of principals responded. The response was relatively equally split between the paper option and the online option.

Field Test

The field test was conducted during March, April, and May 2010. An exploratory factor analysis (EFA) was conducted to evaluate the field test responses. The purpose of

the EFA of the field test was to determine my questionnaire's reliability. The initial analysis produced an overall KMO of .681. This value was satisfactory because it was above .5; however, a higher value was desired. In the field test data, the anti-image correlation table indicated that eleven variables (questions) needed to be removed from the model: Talk, Reserved, Tense, Worries, Quiet, Trusting, Shy, Adlibs, PerValue, NotComp, and PerBelie. After removal of these variables, the analysis was recalculated. The overall KMO improved to .754, which indicated that the parsed dataset would yield more reliable factors than would the original dataset.

Another piece of information provided by the preliminary analysis was the number of factors (clusters of correlated items) embedded within the survey's questions. The primary method for determining the number of factors in a dataset is to examine the eigenvalues. Kaiser's recommendation is to retain factors with eigenvalues greater than 1 (Field, 2005). This analysis indicated that there was a possibility of 14 factors based on this criterion. A scree plot of the eigenvalues (eigenvalues categorized in order of size plotted against the eigenvalue's respective coefficient; this plots as a power law curve) indicated that as many as 11 meaningful factors might exist (determined by finding discontinuities or points of inflection on the plotted curve). The survey was originally constructed to measure seven factors, but the preliminary factor analysis revealed that the principals' constructions of meaning within the dataset might be different from how I perceived the structure of the dataset.

The determinant for the parsed dataset was less than .00001, indicating that there were issues of multicollinearity. Even so, principal component analysis (PCA) techniques

were used to analyze the data; PCA is quite robust against multicollinearity (Field, 2005). Finally, the communalities were consistently about .6, indicating that a small sample size (less than 100) would have been adequate (Field, 2005).

To summarize, the intent of the field test was to obtain confirmation that the final dataset would be robust (as measured by the communalities) and that the questions were internally reliable (as measured by KMOs). These goals were achieved. The dataset was both reliable (after parsing) and internally consistent. No questions were removed in this stage for low reliability coefficients, however; I deferred that task to the larger, more representative primary study.

Exploratory Factor Analysis of Test Data

Initial analysis of the final survey's 197 responses was conducted with exploratory factor analysis using PASW/SPSS v 18. In some cases, respondents did not respond to all questions in the survey, so the surveys from those participants were removed from the analysis. An exploratory factor analysis was conducted on the remining 178 responses.

The first review of the data produced a KMO of .763. As noted above, a factor analysis is expected to yield reliable factors when KMOs are between .7 and .8. The anti-image correlation table, however, suggested removing three variables or questions (a complete list of the survey's variables and corresponding questions is listed in the appendix): Q19, Q48, and Q60. Q19 was the same variable, Worries, that was removed in the field test analysis. From the survey, it read, "Worries a lot." Q60 was the same

variable, Adlibs, that was also removed in the field test analysis. From the survey, it read, "Improvises or adlibs plans of action." Q48, which read, "Experiences feelings of not knowing how to respond to given situations," was not identified as problematic in the field test analysis. None of the other nine questions removed in the field test were identified as inadequate in this dataset (the differences in results was likely due in part to the larger dataset in the final analysis and in the fact that the latter analysis surveyed only people actually in the principalship). With these three variables removed from the data set, the KMO improved to .778 and the anti-image correlation table indicated that no further variables needed to be removed.

Analysis of the eigenvalues produced by this revised EFA data analysis indicated that up to 17 factors, or clusterings of items, were possible; however, from the scree plot it was determined that a five-factor solution was more likely. A nine-factor solution was also suggested by the scree plot; however, it failed to converge (meaning the model for these data contained fewer than nine factors). My sample size and the communalities indicated that the scree plot was a better measure of the number of factors present in the data (Field, 2005). The five-factor solution explained 42.505% of the variance with an acceptable amount of 37% of nonredundant residuals (absolute values greater than 0.05).

The third EFA analysis used principal component analysis (PCA) extraction methods in which the SPSS program was instructed to extract five factors using direct oblimin rotation (that is, the factors were allowed to be naturally correlated with one another). This type of rotation maximized the loading of variables onto the identified factors. The loadings were suppressed for values less than .4 based on the the

recommendation of Field (2005). Based on the loadings at this level, it was difficult to name the factors, therefore, to strengthen the model, loadings of .6 or higher were eventually used to identify factors (or latent variables) in the subsequent analyses (see Hair, Anderson, Tatham, & Black, 1998). As a result of the direct oblimin rotation and this higher degree of supression, six questions loaded on the first factor, which I labeled "Makes A Difference." Nine questions loaded on the second factor, which I labeled "Confidence." Four questions loaded on the third factor, which was labeled "Perception Leader." Four questions loaded on the fourth factor, labeled "Incompetent," and four questions loaded on the fifth factor, "Lacks Social Skills." No questions cross-loaded (loaded on more than one factor), which indicated that the data were very clean. Questions that did not load on any of the five factors (or latent variables) were removed from further analysis involving the five-factor model.

Latent Variables

The factors, or latent variables, identified by the EFA were not those that Zaccaro et al. (2004) predicted. The first factor identified in my analysis was Confidence. This trait relates to principals who are confident in both their position and confident in their ability to to carry out the duties of the principalship. Confidence encompasses questions intended to measure both Zaccaro et al.'s (2004) distal traits, personality and cognitive abilities, and one proximal trait, social appraisal skills. This factor included the observed variables Quarrels (-0.883; negative loadings are interpreted as their conceptual opposites), Energy (0.84), Blue (-0.835), Original (0.813), Careless (-0.808), Talk

(0.807), Relaxed (0.799), Thorough (0.73), and Fault (-0.68). Table 4.1 identifies the survey questions associated with Confidence; the column labeled, "Intended Latent Variable" refers to the traits that the given question should have loaded on were Zaccaro et al.'s (2004) model correct. For convenience, variables that loaded negatively are marked with asterisks.

Table 4.1

Indicator Variables for Confidence

Variable	**Question from Survey**	**Intended Latent Variable**
Talk	1. Is talkative	Social Appraisal Skills
Fault*	2. Tends to find fault with others	Social Appraisal Skills
Thorough	3. Does a thorough job	Personality
Blue*	4. Is depressed, blue	Personality
Original	5. Is original, comes up with new ideas	Cognitive Abilities
Careless*	8. Can be somewhat careless	Personality
Relaxed	9. Is relaxed, handles stress well	Personality
Energy	11. Is full of energy	Social Appraisal Skills
Quarrels*	12. Starts quarrels with others	Social Appraisal Skills

The second factor is Makes A Difference. This trait refers to principals who are determined to make a difference within the school and in the lives of students. It consists of questions that measure Zaccaro et al.'s (2004) distal trait, personality, and three proximal traits: social appraisal skills, expertise and tacit knowledge, and problem-solving. Makes A Difference includes the observed variables Persist (0.718), Kind (0.656), Efficien (0.655), Cooperat (0.651), Persever (0.636), and ProfDev (0.616). Table

4.2 identifies the survey questions associated with Makes A Difference. Again, the column labeled "Intended Latent Variable" refers to the traits that the given question should have loaded on under the Zaccaro model. With Makes A Difference, no variable loaded negatively.

Table 4.2

Indicator Variables for Makes a Difference

Variable	**Question from Survey**	**Intended Latent Variable**
Persevere	28. Perseveres until the task is finished	Personality
Kind	32. Is considerate and kind to almost everyone	Social Appraisal Skills
Efficient	33. Does things efficiently	Personlity
Cooperative	42. Likes to cooperate with others	Social Appraisal Skills
Prof. Dev.	66. Stays current by attending professional development conferences/workshops	Expertise and Tacit Knowledge
Persist	69. Is persistent and follows through with matters	Problem Solving

Factor three identifies a leader who is socially outgoing and therefore may project oneself as a leader. This skill set is valuable to principals in that it allows them to be perceived by stakeholders as leader-like. I labeled this third factor Perception Leader. This factor also defines a leader who may appear leader-like yet he or she actually lacks skills for the daily responsibilities of leadership; that is, this individual verbally projects competence, but is not good at actually working with employees. The Perception Leader factor contains questions measuring Zaccaro et al.'s (2004) distal trait, personality, and the proximal trait, social appraisal skills. This factor included the observed variables Lazy (0.761), Enthusia (-0.75), Quiet (-0.716), and Disorgan (0.62). Table 4.3 identifies the

survey questions associated with Perception Leader. The variables that loaded negatively are marked with asterisks.

Table 4.3

Indicator Variables for Perception Leader

Variable	**Question from Survey**	**Intended Latent Variable**
Enthusiasm*	16. Generates a lot of enthusiasm	Social Appraisal Skills
Disorganization	18. Tends to be disorganized	Personality
Quiet*	21. Tends to be quiet	Social Appraisal Skills
Lazy	23. Tends to be lazy	Personlity

Factor four, Incompetent, is one of the "dark" traits of leadership. Arguably, possession of this trait may be the worst scenario for principals in that they fail to recognize that they lack the necessary traits, skills, and knowledge for the position. This trait consisted of questions measuring two of Zaccaro et al.'s (2004) distal traits, personality and cognitive abilities, and two proximal traits, social appraisal skills and expertise and tacit knowledge. Incompetent included the observed variables Expertis (-0.803), NotArt (0.795), FolThrou (-0.783), and Rude (0.727). Table 4.4 identifies the survey questions associated with Incompetent. As with the previous tables, the column labeled "Intended Latent Variable" refers to the traits that the given questions should have loaded on were Zaccaro et al.'s (2004) model correct. The variables that loaded negatively are marked with asterisks.

Table 4.4

Indicator Variables for Incompetent

Variable	Question from Survey	Intended Latent Variable
Rude	37. Is sometimes rude to others	Social Appraisal Skills
Follow Through*	38. Makes plans and follows through with them	Personality
Not Art	41. Has few artistic interests	Cognitive Abilities
Expertise*	46. Possesses expertise in the educational field	Expertise and Tacit Knowledge

The fifth factor, Lacks Social Skills, is also a "dark" trait of leadership. This trait is defined as being socially immature or lacking "people skills." Lacks Social Skills consisted of questions purported to measure Zaccaro et al.'s (2004) distal trait, personality, and the proximal trait, social appraisal skills. The trait included the observed variables, Moody (0.82), Aloof (0.82), Calm (-0.712), and Shy (0.703). Table 4.5 identifies the survey questions associated with Lacks Social Skills, and the one variable that loaded negatively is marked with an asterisk.

Table 4.5

Indicator Variables for Lacks Social Skills

Variable	Question from Survey	Intended Latent Variable
Aloof	27. Can be cold and aloof	Social Appraisal Skills
Moody	29. Can be moody	Personality
Shy	31. Is sometimes shy, inhibited	Social Appraisal Skills
Calm*	34. Remains calm in tense situations	Personlity

Because these five factors were not the ones this study set out to explore (instead, I had expected to apply the model presented by Zaccaro et al. directly), two models were analyzed in the next step, Confirmatory Factor Analysis: (a) the seven-factor hypothesized model from the literature and (b) the five-factor model identified from the EFA.

Confirmatory Factor Analysis

The Seven-Factor Zaccaro et al. Model: Distal Attributes

The first CFA analysis was conducted on the hypothesis related to the model's distal traits. I wanted to see if the distal traits identified by Zaccaro et al. matched the data provided by the principals.

Hypotheis 1: Distal traits are comprised of items measuring personality, cognitive abilities, and motives and values.

I conducted a CFA to determine how well the observed variables (from the survey) that I assigned to each of the latent variables actually fit the respective latent variable. Based on the literature review, these latent variables were assumed to be interrelated, so the model that was tested shows covariation among the latents (see Figure 4.1).

CFA is performed in steps and provides several goodness-of-fit statistics. First, the model predicted by the hypothesis is tested. The analysis results indicate how well the data fits the model and how the model can be adapted to improve the fit between the data and the model in subsequent steps. The first goodness-of-fit statistic is the CMIN. It is

similar to a χ^2 and is meaningful only when compared to the CMIN for alternative models (see Table 4.6). The initial analysis of the Zaccaro et al. (2004) distal attributes model produced a set of unacceptable goodness-of-fit statistics. The model fit summary provided a CMIN of 1563.44 with 492 degrees of freedom. The Standardized Root Mean Square Residual (SRMR) yielded a value of .13. This value is a measure of the average difference between the predicted and observed variance and covariance. A value of .08 or less is the desired value for a model of adequate fit. The SRMR was the first indication that the distal trait model was not a good one. Other indications of the model's poor fit came from the TLI, CFI, and RMSEA values. The Tucker-Lewis index (TLI) value should be greater than .95 and ideally will be close to 1; however, the Zaccaro et al. (2004) model produced a value of .41. The Comparative Fit Index (CFI) compares the proposed model with a model in which the latent variables are uncorrelated. The CFI value should be greater than or equal to .9; the Zaccaro et al. (2004) model produced a value of .45. The Root Mean Square Error of Approximation (RMSEA) measures the discrepancy per degree of freedom. An adequate fit is considered to be the case if the value is less than or equal to .08 and a good fit is defined by a value less than or equal to .05 (Byrne, 2010). This distal attributes model produced a value of .11.

Table 4.6

Distal Attributes Model – Goodness-of-Fit Indices from Initial Analysis

Index	**Value**	**Recommended Value for Acceptance**
CMIN	1563.44	Must compare to subsequent analysis
DF	492	
SRMR	.13	<.08 for adequate fit
TLI	.41	>.95
CFI	.45	>.9
RMSEA	.11	≤.05 for good fit

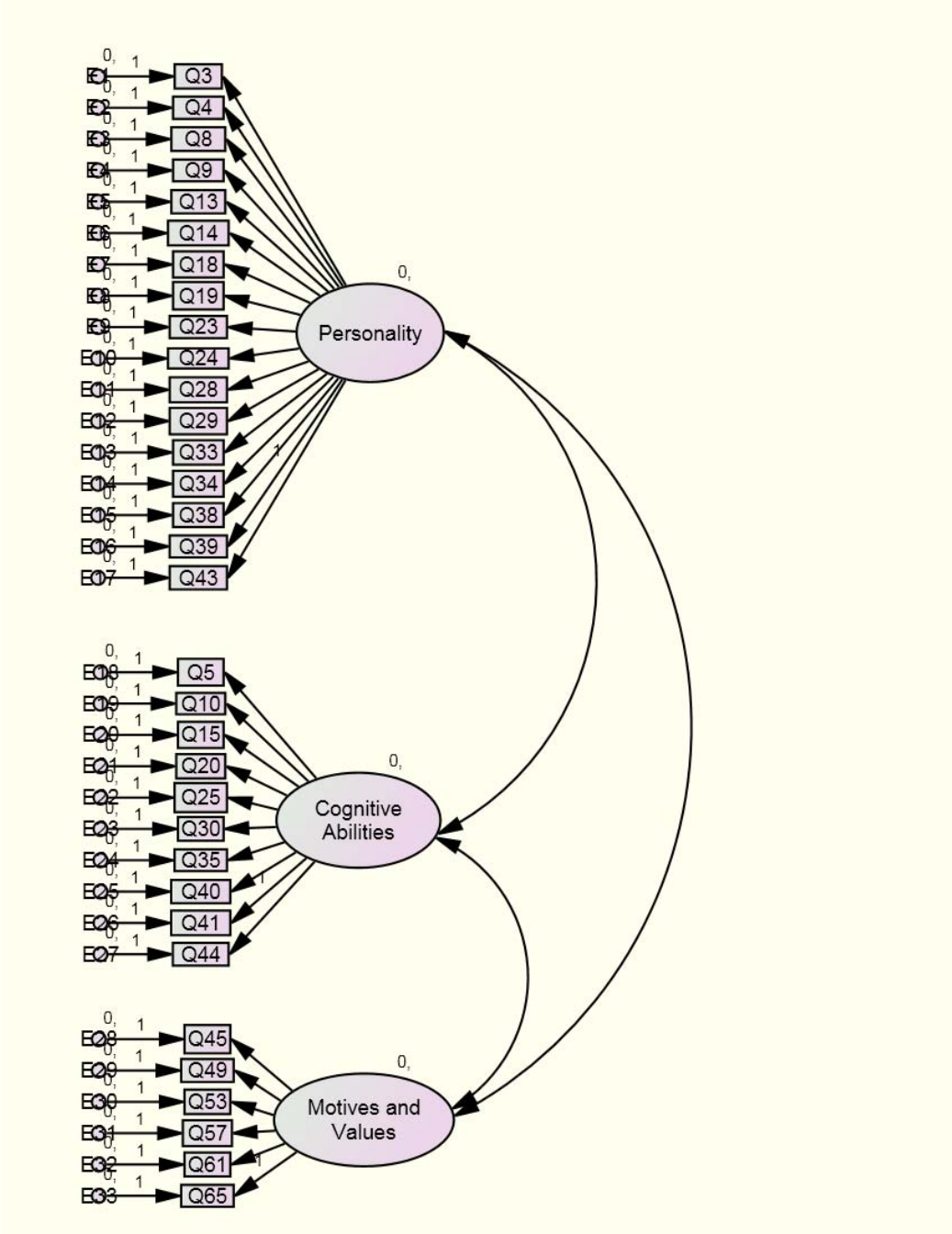


Figure 4.1

Initial Model of Zaccaro et al.'s (2004) Hypothesis for Distal Traits

Because of the poor fit, I reviewed the critical ratio values in the Regression Weights table (Table 4.7) to identify questionairre items that were not loading well in the distal attributes model. Values less than 1.96 indicated that those questions from the survey needed to be removed from the model. As a result, five questions (observed variables) were removed from the latent variable, Personality; four questions were removed from Cognitive Abilities, and two questions were removed from Motives and Values. The critical ratios for the latent variables from the Covariances table (a measure of whether an estimate of the latent variables is statistically different from zero) were all above the 1.96 value (see Table 4.8), indicating that the correlations (covariances) among latent variables were statistically significant and should remain.

Table 4.7

Regression Weights from Initial Analysis of Distal Traits

	Estimate	S.E.	C.R.	P	Label
Q39 <--- Personality	1.000				
Q38 <--- Personality	-1.291	.472	-2.733	.006	par_1
Q34 <--- Personality	-1.963	.617	-3.183	.001	par_2
Q33 <--- Personality	-.319	.211	-1.510	.131	par_3
Q29 <--- Personality	1.924	.639	3.010	.003	par_4
Q28 <--- Personality	-.513	.247	-2.074	.038	par_5
Q24 <--- Personality	-.349	.298	-1.174	.241	par_6
Q23 <--- Personality	1.656	.655	2.526	.012	par_7
Q19 <--- Personality	.313	.363	.863	.388	par_8
Q18 <--- Personality	1.516	.539	2.813	.005	par_9
Q14 <--- Personality	.644	.358	1.797	.072	par_10
Q13 <--- Personality	-.484	.259	-1.869	.062	par_11
Q9 <--- Personality	-4.643	1.260	-3.686	***	par_12
Q8 <--- Personality	4.714	1.269	3.715	***	par_13
Q4 <--- Personality	5.361	1.440	3.724	***	par_14
Q3 <--- Personality	-2.751	.764	-3.601	***	par_15
Q41 <--- Cognitive Abilities	1.000				
Q40 <--- Cognitive Abilities	.243	.155	1.570	.116	par_16
Q35 <--- Cognitive Abilities	1.159	.364	3.180	.001	par_17
Q30 <--- Cognitive Abilities	-.965	.293	-3.290	.001	par_18
Q25 <--- Cognitive Abilities	-.343	.172	-1.997	.046	par_19
Q20 <--- Cognitive Abilities	-.247	.173	-1.429	.153	par_20
Q15 <--- Cognitive Abilities	-.047	.154	-.308	.758	par_21
Q10 <--- Cognitive Abilities	-1.175	.327	-3.594	***	par_22
Q5 <--- Cognitive Abilities	-2.636	.658	-4.009	***	par_23
Q65 <--- Motives and Values	1.000				

Table 4.7

Regression Weights from Initial Analysis of Distal Traits (Continued)

	Estimate	S.E.	C.R.	P	Label
Q61 <--- Motives and Values	.424	.164	2.592	.010	par_24
Q57 <--- Motives and Values	1.620	.351	4.617	***	par_25
Q53 <--- Motives and Values	.001	.096	.007	.995	par_26
Q49 <--- Motives and Values	1.453	.315	4.618	***	par_27
Q45 <--- Motives and Values	.165	.098	1.692	.091	par_28
Q43 <--- Personality	.922	.424	2.173	.030	par_29
Q44 <--- Cognitive Abilities	-.351	.203	-1.732	.083	par_30

Table 4.8

Covariances from Initial Analysis of Distal Traits

		Estimate	S.E.	C.R.	P	Label
Personality	<--> Cognitive Abilities	.080	.030	2.656	.008	par_31
Motives and Values	<--> Personality	.061	.023	2.601	.009	par_32
Motives and Values	<--> Cognitive Abilities	.089	.035	2.534	.011	par_33

The second CFA analysis, after the removal of poorly fitting observed variables, still produced a set of unacceptable statistics for the distal trait model. The CMIN was reduced by almost half to a value of 827.72 with 227 degrees of freedom, which was statistically significant and positive. The SRMR improved to a value of .12; however, this value still was not close to the acceptable .08 value. The TLI improved to .54 and the CFI improved to .59, however neither value was close to the acceptable values (>.95 and

>.90 respectively). The RMSEA actually produced a poorer value than the first model, with a value of .12. I again reviewed the critical ratio values of the Regression Weights table. As a result, one additional question was removed from Personality and two questions were removed from Cognitive Abilities.

I also calculated Modification indices (MI) in this step. The MI statistics informed me of the appropriateness of the model for the data and directed me to add covariances (curved lines) between select error terms in the model. In total, 13 covariances were added between error measures (see Table 4.9). As a result, the new distal attributes model produced a set of statistics that approached acceptable values. As with previous steps, the CMIN dropped, this time to a value of 260.11 with 154 degrees of freedom. Although not less than .08, the SRMR value approached .1. The TLI and CFI both improved to values of .9 and .92, respectively. The RMSEA dropped to .06 which is indicative of an adequate model fit. Althought the results were only marginally good, I decided to stop at this point. The model was getting increasingly complex and there was little evidence in the data that the model could be improved further. Final goodness-of-fit values for the distal attributes model are summarized in Table 4.10. Reference the model being analyzed in Figure 4.2.

Table 4.9

Modification Indices from Analysis of Distal Traits

		M.I.	**Par Change**
E17 <-->	Cognitive Abilities	13.857	-.082
E17 <-->	Personality	9.532	.036
E33 <-->	E17	5.934	.219
E18 <-->	E17	26.183	.333
E19 <-->	E31	4.180	.123
E22 <-->	E32	7.629	.137
E24 <-->	Motives and Values	19.066	.233
E24 <-->	E29	11.729	.308
E25 <-->	E31	4.187	.105
E25 <-->	E22	4.124	.073
E26 <-->	Motives and Values	9.266	.167
E26 <-->	E17	15.877	.353
E26 <-->	E29	4.081	.187
E26 <-->	E33	9.725	.308
E26 <-->	E18	6.333	.180
E26 <-->	E24	10.955	.313
E1 <-->	E26	6.112	.147
E2 <-->	E17	4.838	.125
E2 <-->	E24	4.315	-.126
E3 <-->	E33	8.358	-.176
E3 <-->	E1	5.044	-.081
E4 <-->	E18	9.101	.156
E4 <-->	E24	4.598	.148
E4 <-->	E26	6.018	.174
E7 <-->	Motives and Values	6.618	.134
E7 <-->	E29	5.018	.196
E7 <-->	E19	6.885	.167

Table 4.9

Modification Indices from Analysis of Distal Traits (Continued)

	M.I.	Par Change
E7 <--> E24	8.788	.266
E7 <--> E2	6.122	-.146
E9 <--> Motives and Values	16.658	.286
E9 <--> E29	7.187	.317
E9 <--> E24	9.216	.368
E9 <--> E26	7.327	.337
E9 <--> E1	5.956	.185
E9 <--> E2	6.706	-.207
E9 <--> E7	66.301	.959
E11 <--> E17	10.642	-.157
E11 <--> E22	29.301	.178
E11 <--> E25	10.927	.103
E11 <--> E1	4.557	.069
E11 <--> E7	8.662	-.147
E12 <--> Motives and Values	8.757	.165
E12 <--> E17	8.604	.264
E12 <--> E32	8.838	.240
E12 <--> E18	4.999	.162
E12 <--> E23	7.843	-.206
E12 <--> E24	39.768	.606
E12 <--> E4	4.013	.144
E12 <--> E7	6.917	.246
E14 <--> E32	4.736	-.151
E14 <--> E23	9.374	.194
E14 <--> E24	26.190	-.423
E14 <--> E1	5.357	-.120
E14 <--> E2	4.214	.111

Table 4.9

Modification Indices from Analysis of Distal Traits (Continued)

	M.I.	Par Change
E14 <--> E7	9.523	-.248
E14 <--> E9	14.972	-.420
E14 <--> E12	58.154	-.657
E15 <--> E17	8.507	-.221
E15 <--> E33	14.738	-.324
E15 <--> E26	65.545	-.674
E16 <--> Motives and Values	4.716	.083
E16 <--> E17	27.215	.322
E16 <--> E33	10.860	.227
E16 <--> E18	11.416	.169
E16 <--> E26	39.182	.425
E16 <--> E15	21.606	-.270

Table 4.10

Distal Attributes Model – Goodness of Fit Indices from Final Analysis

Index	**Value**	**Recommended Value for Acceptance**
CMIN	260.11	Compare to initial value (1563.44)
DF	154	Compare to initial value (492)
SRMR	.10	<.08 for adequate fit
TLI	.90	>.95
CFI	.92	>.9
RMSEA	.06	≤.05 for good fit

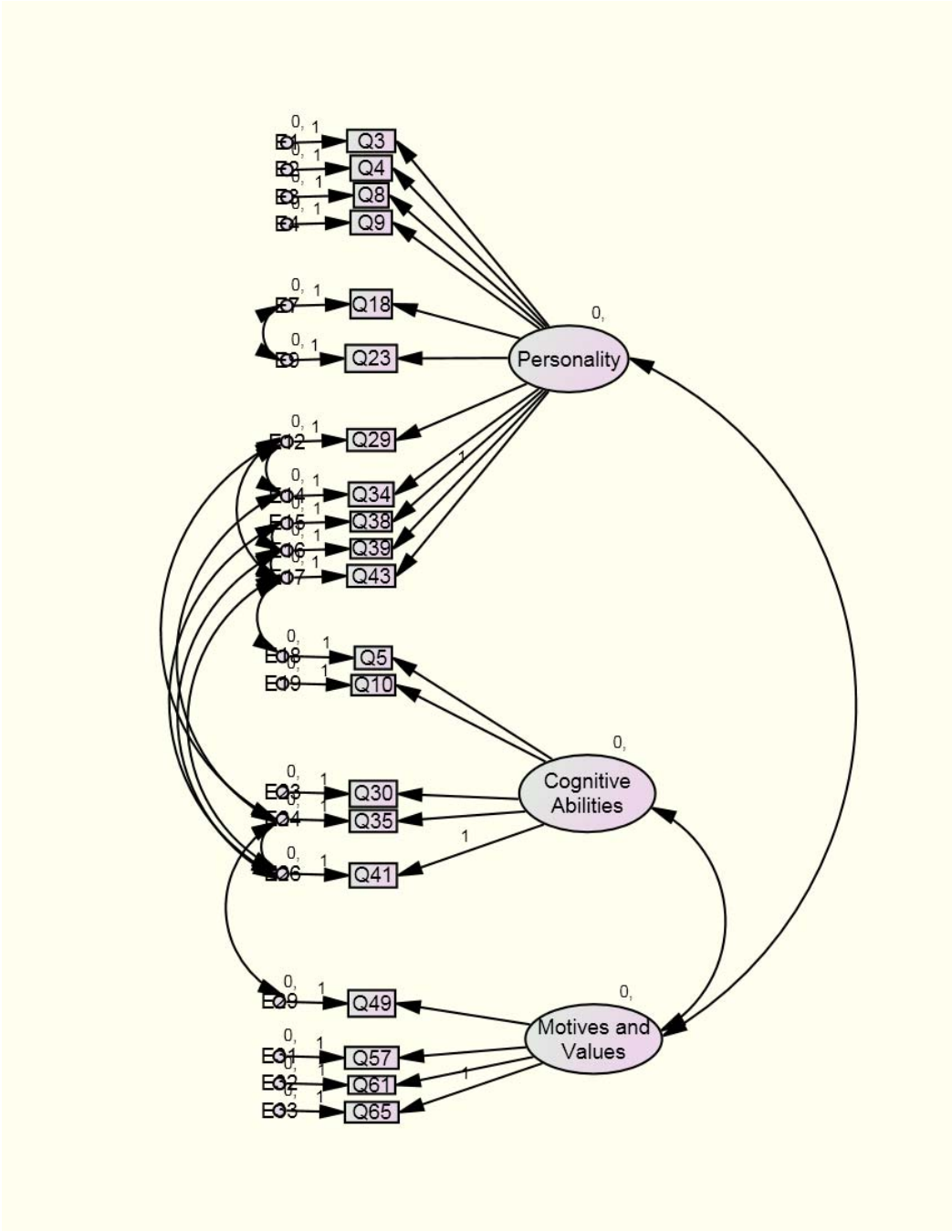


Figure 4.2.

Final Model of Zaccaro et al.'s (2004) Hypothesis for Distal Traits

The Seven-Factor Zaccaro et al. Model: Proximal Attributes

The second part of the analysis of the Zaccaro et al. (2004) model involved a look at four proximal attributes: social appraisal skills, problem-solving, expertise and tacit knowledge, with an additional variable, sensemaking, also included. These traits were treated as interdependent latent variables (see Figure 4.3) and a CFA was conducted to determine how well the purported observed variables fit the model.

Hypothesis 2: Proximal traits are comprised of items measuring social appraisal skills, problem-solving, expertise and tacit knowledge, and sensemaking.

The initial analysis of this hypothesis produced a set of unacceptable statistics, therefore modifications were made to the proximal trait model. The model fit summary provided a CMIN of 1711.4 with 588 degrees of freedom (see Table 4.11). The Standardized Root Mean Square Residual (SRMR) yielded a value of .13. A value of .08 is the desired value for a model of adequate fit. As with the the distal attributes model, the SRMR was the first indication that the proximal trait model was not a good one. Other indications of the model's poor fit came from the TLI, CFI, and RMSEA values. The Tucker-Lewis index (TLI) value should be close to one or greater than .95, but this iteration produced a value of .38. The CFI value should be greater than or equal to .9; this iteration produced a value of .42. An adequate fit is considered to be the case if the RMSEA value is less than or equal to .08 and a good fit is defined by a value less than or equal to .05. This initial proximal attributes model produced a value of .10.

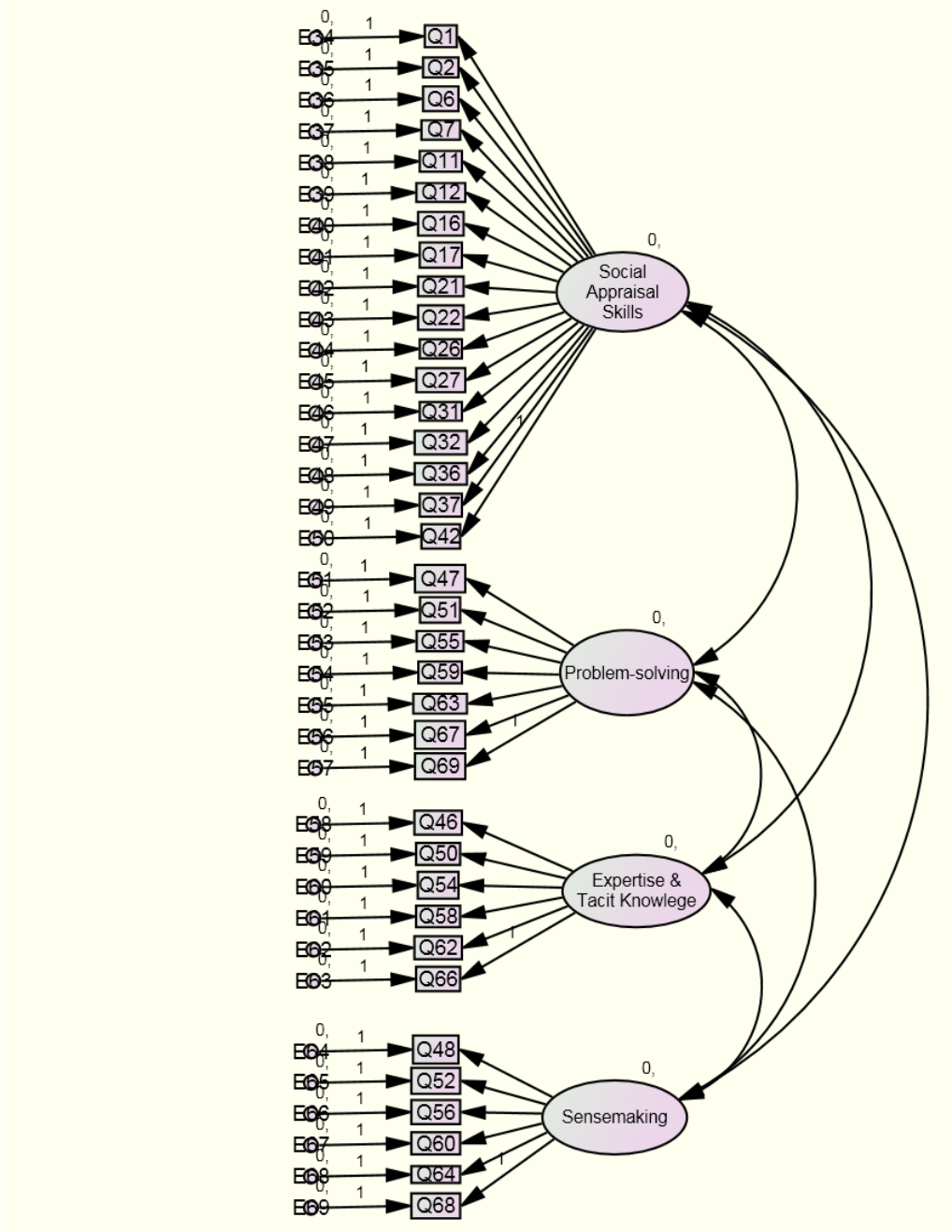


Figure 4.3

Initial Model of Zaccaro et al.'s (2004) Hypothesis for Proximal Traits (plus sensemaking)

Table 4.11

Proximal Attributes Model – Goodness-of-Fit Indices from Initial Analysis

Index	**Value**	**Recommended Value for Acceptance**
CMIN	1711.4	Must compare to subsequent analyses
DF	588	
SRMR	.13	<.08 for adequate fit
TLI	.38	>.95
CFI	.42	>.9
RMSEA	.10	≤.05 for good fit

Consequently I reviewed the critical ratio values of the Regression Weights table to find variables that did not fit in the proximal attributes model (Table 4.12). Values less than 1.96 indicated that those questions from the survey needed to be removed from the model. Upon inspection of the critical ratios, all but one of the questions assigned to Social Appraisal Skills had critical ratios less than 1.96. Rather than deleting all of the questions related to Social Appraisal Skills, I elected to eliminate the five questions with the smallest critical ratios. Two questions from Sensemaking were also removed.

Table 4.12

Regression Weights from Initial Analysis of Proximal Traits

			Estimate	S.E.	C.R.	P	Label
Q42	<---	Social Appraisal Skills	1.000				
Q37	<---	Social Appraisal Skills	9.217	10.698	.862	.389	par_1
Q36	<---	Social Appraisal Skills	-6.788	7.854	-.864	.387	par_2
Q32	<---	Social Appraisal Skills	-.366	1.378	-.265	.791	par_3
Q31	<---	Social Appraisal Skills	8.987	10.392	.865	.387	par_4
Q27	<---	Social Appraisal Skills	10.745	12.397	.867	.386	par_5
Q26	<---	Social Appraisal Skills	-7.640	8.845	-.864	.388	par_6
Q22	<---	Social Appraisal Skills	.935	1.776	.526	.599	par_7
Q21	<---	Social Appraisal Skills	-2.786	3.546	-.786	.432	par_8
Q17	<---	Social Appraisal Skills	-2.419	3.285	-.736	.462	par_9
Q16	<---	Social Appraisal Skills	-6.612	7.781	-.850	.396	par_10
Q12	<---	Social Appraisal Skills	28.968	33.003	.878	.380	par_11
Q11	<---	Social Appraisal Skills	-22.681	25.851	-.877	.380	par_12
Q7	<---	Social Appraisal Skills	-2.160	2.841	-.760	.447	par_13
Q6	<---	Social Appraisal Skills	12.285	14.085	.872	.383	par_14
Q2	<---	Social Appraisal Skills	20.339	23.199	.877	.381	par_15
Q1	<---	Social Appraisal Skills	-18.010	20.550	-.876	.381	par_16
Q69	<---	Problem-solving	1.000				

Table 4.12

Regression Weights from Initial Analysis of Proximal Traits (Continued)

			Estimate	S.E.	C.R.	P	Label
Q67	<---	Problem-solving	1.191	.217	5.496	***	par_17
Q63	<---	Problem-solving	.941	.160	5.882	***	par_18
Q59	<---	Problem-solving	.961	.226	4.259	***	par_19
Q55	<---	Problem-solving	1.217	.287	4.241	***	par_20
Q51	<---	Problem-solving	1.344	.280	4.807	***	par_21
Q47	<---	Problem-solving	.988	.172	5.755	***	par_22
Q66	<---	Expertise & Tacit Knowledge	1.000				
Q62	<---	Expertise & Tacit Knowledge	2.233	.538	4.147	***	par_23
Q58	<---	Expertise & Tacit Knowledge	1.116	.275	4.058	***	par_24
Q54	<---	Expertise & Tacit Knowledge	.995	.312	3.190	.001	par_25
Q50	<---	Expertise & Tacit Knowledge	.874	.257	3.406	***	par_26
Q46	<---	Expertise & Tacit Knowledge	1.615	.457	3.533	***	par_27
Q68	<---	Sensemaking	1.000				
Q64	<---	Sensemaking	.422	.211	2.000	.046	par_28
Q60	<---	Sensemaking	.748	.293	2.550	.011	par_29
Q56	<---	Sensemaking	.353	.216	1.633	.102	par_30
Q52	<---	Sensemaking	.818	.221	3.701	***	par_31
Q48	<---	Sensemaking	.209	.272	.769	.442	par_32

The second analysis also produced a set of unacceptable statistics for the proximal trait model. The CMIN decreased to 1121.57 with 371 degrees of freedom; this is statistically significant. The SRMR remained the same at .12. The TLI improved to .48 and the CFI improved to .52; however, neither value was close to the acceptable values. The RMSEA became worse with a value of .11. I again reviewed the critical ratio values of the Regression Weights table. None of the remaining questions related to Social Skills were significant, and the latent variable Social Skills was completely removed from the proximal trait model. The removal of this latent variable was troublesome because the literature review (see Zaccaro, 2002; Zaccaro, Gilbert, Thor, & Mumford, 1991) indicated that social skills are related to one's leadership ability.

The next two model tests looked at the modification indices, and covariances were added between error measures as a consequence. In total, 11 covariances were added. Subsequent analysis produced a set of statistics that approached acceptable values. The CMIN reduced to 195.35 with 105 degrees of freedom. The SRMR value was .08. The TLI and CFI both improved to .82 and .86, respectively. The RMSEA reduced to .07, which is indicative of an adequate fit. Review of the Regression Weights table (Table 4.13) indicated that two questions should be deleted from the latent variable Expertise and Tacit Knowledge.

Table 4.13

Regression Weights from Analysis of Proximal Traits

	Estimate	S.E.	C.R.	P	Label
Q69 <--- Problem-solving	1.000				
Q67 <--- Problem-solving	.706	.165	4.287	***	par_1
Q63 <--- Problem-solving	.894	.126	7.091	***	par_2
Q59 <--- Problem-solving	.796	.183	4.353	***	par_3
Q55 <--- Problem-solving	.506	.222	2.282	.022	par_4
Q51 <--- Problem-solving	.654	.212	3.079	.002	par_5
Q47 <--- Problem-solving	.866	.134	6.446	***	par_6
Q66 <--- Expertise & Tacit Knowledge	1.000				
Q62 <--- Expertise & Tacit Knowledge	.803	.292	2.754	.006	par_7
Q58 <--- Expertise & Tacit Knowledge	.950	.187	5.066	***	par_8
Q54 <--- Expertise & Tacit Knowledge	.396	.208	1.903	.057	par_9
Q50 <--- Expertise & Tacit Knowledge	.624	.151	4.132	***	par_10
Q46 <--- Expertise & Tacit Knowledge	.437	.291	1.502	.133	par_11
Q68 <--- Sensemaking	1.000				
Q64 <--- Sensemaking	.473	.187	2.526	.012	par_12
Q60 <--- Sensemaking	.714	.258	2.769	.006	par_13
Q52 <--- Sensemaking	.644	.187	3.439	***	par_14

The final model test showed statistical values that approached acceptable values. The CMIN dropped to 136.17 with 81 degrees of freedom. The SRMR value was .07, which is indicative of adequate fit. The TLI and CFI continued to improve. Although not over the .9 threshold, the TLI increased to .87 and the CFI was .9. The RMSEA dropped to .06, which is indicative of an adequate model fit. As was the case with the distal model, the proximal model fit was only marginally acceptable, but no further improvements were identified. Goodness-of-fit values for the proximal attributes model are summarized in Table 4.14. This final model is presented in Figure 4.4. Having found marginal results from the CFA of the distal and proximal attributes models, I turned my attention to the five-factor model identified from the EFA.

Table 4.14

Proximal Attributes Model – Goodness-of-Fit Indices from Final Analysis

Index	**Value**	**Recommended Value for Acceptance**
CMIN	136.17	Compare to initial value (1711.4)
DF	81	Compare to initial value (588)
SRMR	.07	<.08 for adequate fit
TLI	.87	>.95
CFI	.90	>.9
RMSEA	.06	≤.05 for good fit

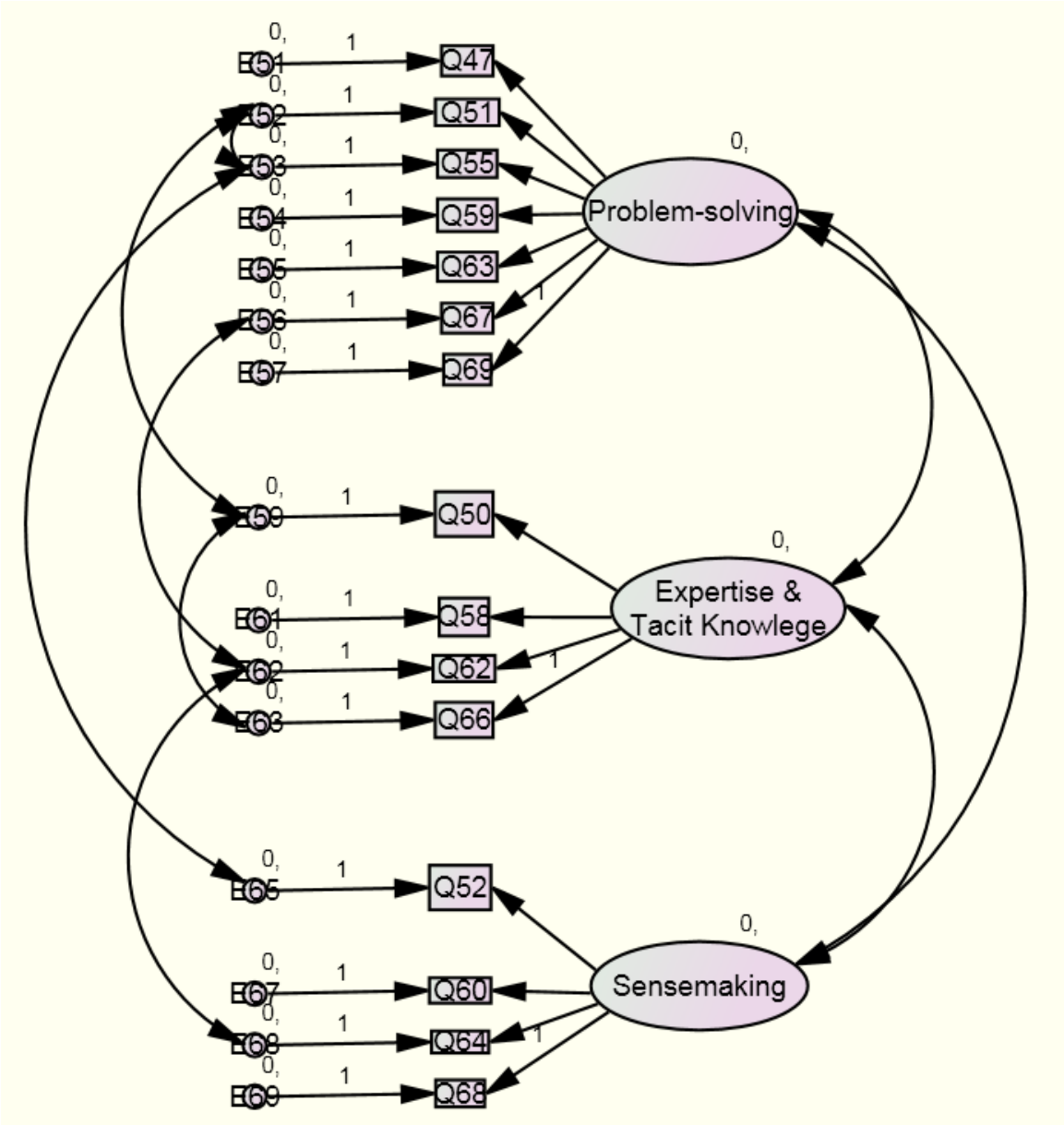


Figure 4.4

Final Model of Zaccaro et al.'s (2004) Hypothesis for Proximal Traits (plus sensemaking)

Five-Factor Model Based on the Exploratory Factor Analysis

A CFA was performed using the five-factor leadership model derived from the EFA discussed above. It should be noted that the survey questions related to Zacarro et al.'s (2004) distal trait, motives and values, and the proximal trait, sensemaking, did not load on any of the five factors at the a .6 factor loading level (as noted earlier in this chapter, the .6 factor loading was adopted to refine the EFA factor model). As a result the five-factor leadership model analyzed by AMOS did not contain questions measuring these particular attributes; the other five attributes from Zaccaro et al.'s (2004) original seven-factor model were included because questions from those original attributes did load on the EFA factors.

A CFA was used to analyze the appropriateness of the newly proposed five-factor leadership model (see Figure 4.5).

Hypothesis 3: Traits related to leadership include Confidence, Makes A Difference, Perception Leader, Incompetent, and Lacks Social Skills.

In such an analysis, the newly identified five factors are termed latent variables, hence the CFA was conducted on the latent variables Confidence, Makes A Difference, Perception Leader, Incompetent, and Lacks Social Skills.

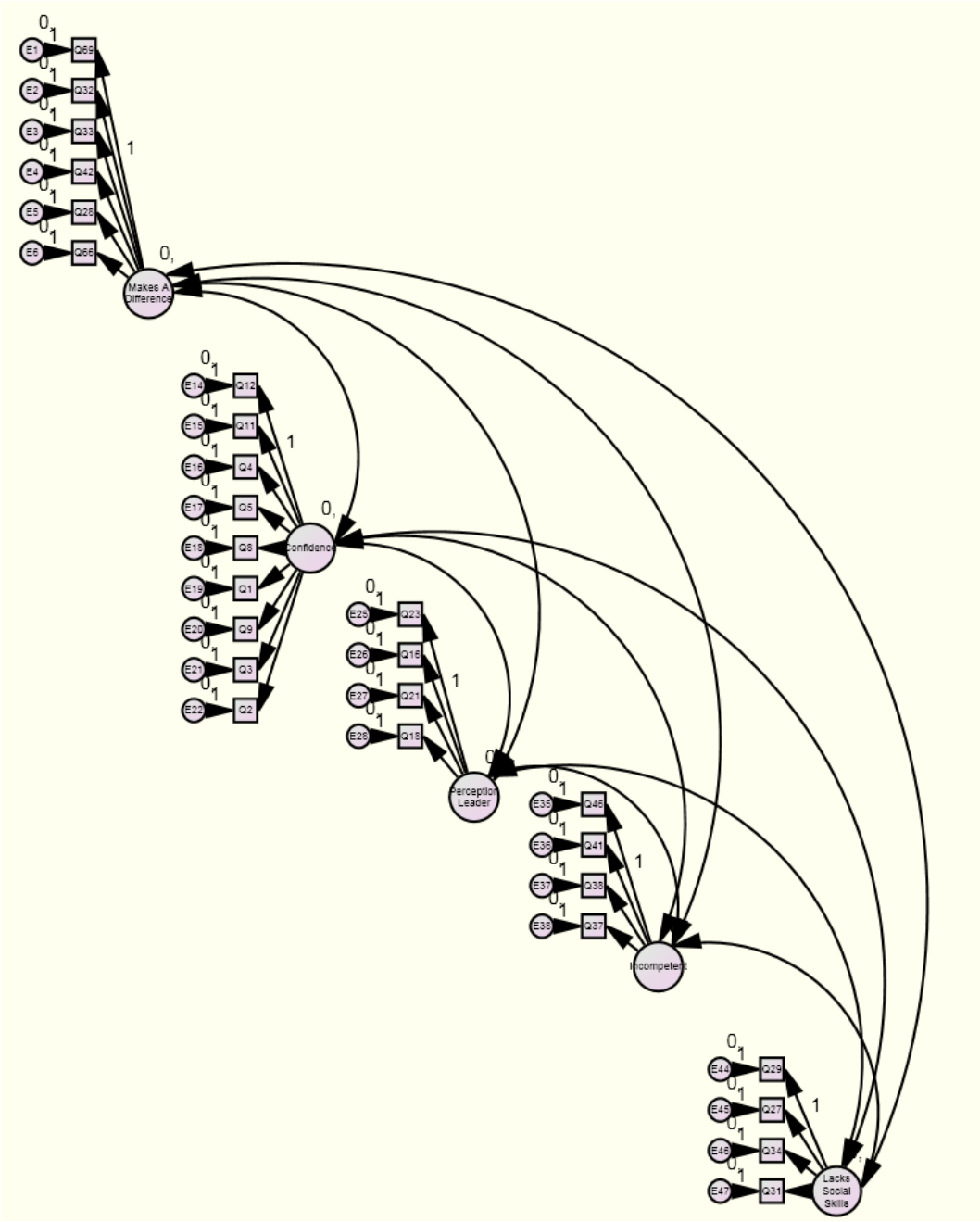


Figure 4.5

Initial Five-Factor Model for the Hypothesis Suggested by the EFA

The first analysis of the model produced a set of reasonably acceptable statistics; however, each value was improvable. The model fit summary provided a CMIN of 509.27 with 314 degrees of freedom (see Table 4.15). The Standardized Root Mean Square Residual (SRMR) yielded a value of .07. This value is a measure of the average difference between the predicted and observed variance and covariance. The model is considered to be adequate fit if the value is less than .08. The Tucker-Lewis index (TLI) value should be close to one or greater than .95; however, this iteration produced a value of .92. The comparative fit index (CFI) compares the proposed model with a model in which the latent variables are uncorrelated. The CFI value should be greater than or equal to .9; this analysis produced a value of .93. The root mean square error of approximation (RMSEA) measures the discrepancy per degree of freedom. An adequate fit is a coefficient that is less than or equal to .08, and a good fit is defined by a value less than or equal to .05. This step produced a value of .06. The Covariance table of the Estimates indicated that adjustments needed to be made in the covariances with the latent variable Makes A Difference. The analysis did not support covariances between it and the other four latent variables, therefore, these relationships were removed from the model (see Figure 4.6).

Table 4.15

Five-Factor Model – Goodness-of-Fit Indices from Initial Analysis

Index	**Value**	**Recommended Value for Acceptance**
CMIN	509.27	Must compare to subsequent analyses
DF	314	Must compare to subsequent analyses
SRMR	.07	<.08 for adequate fit
TLI	.92	>.95
CFI	.93	>.9
RMSEA	.06	≤.05 for good fit

The second analysis suggested that still more adjustments to the model were warranted. The CMIN did not improve; rather, it increased to 514.76 with 318 degrees of freedom (it was 509.27 initially). The SRMR remained at .07, which indicated that the model was of adequate fit. Neither the TLI nor the CFI value changed in this step. The RMSEA also remained unchanged. The Covariances table of the Modification Indices led me to include a covariance between the errors for Talk (error for Q1 from the survey) and Enthusia (error for Q16 from the survey).

The third analysis indicated that cross loadings were present between Makes A Difference and the measurable variable Thorough (Q3 from the survey) and between Incompetent and the measurable variable Cooperat (Q42 from the survey). As a result of these adjustments to the model, a good fit was obtained for the five factor leadership model. The CMIN dropped significantly to 468.14 with 315 degrees of freedom. The SRMR remained at .07. The TLI and CFI improved to .94 and .95, respectively, and the RMSEA improved to .05. In the end, the statistical values for the five-factor model were

consistently better than the values obtained when a CFA was conducted on the model proposed by Zaccaro et al. The five-factor model was used for the development of the subsequent structural equation model (SEM). Goodness-of-fit values for the five-factor model are summarized in Table 4.16. This final model is presented in Figure 4.6.

Table 4.16

Five-Factor Model – Goodness-of-Fit Indices from Final Analysis

Index	**Value**	**Recommended Value for Acceptance**
CMIN	468.14	Compare to initial value (509.27)
DF	315	Compare to initial value (314)
SRMR	.07	<.08 for adequate fit
TLI	.94	>.95
CFI	.95	>.9
RMSEA	.05	≤.05 for good fit

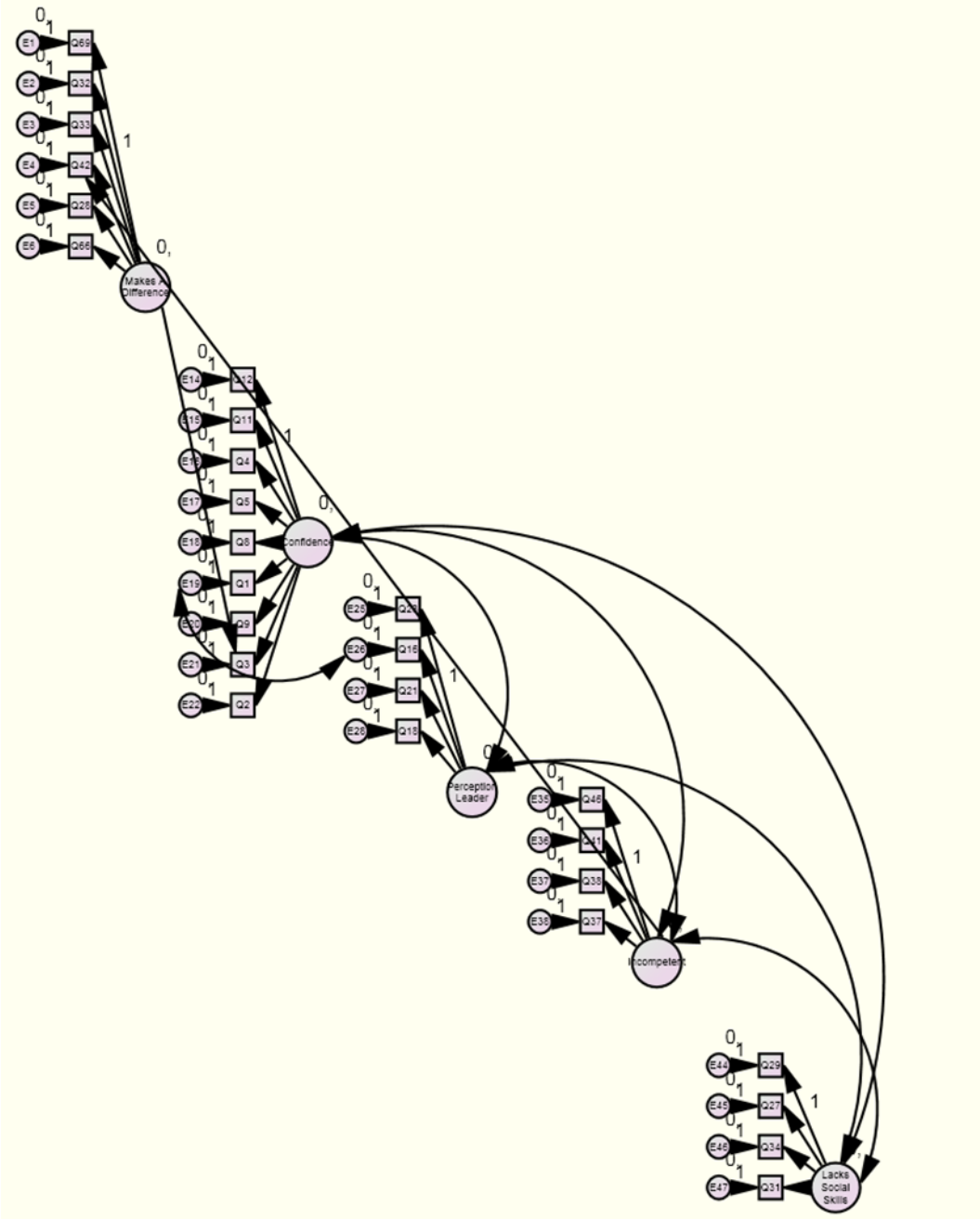


Figure 4.6

Final Five-Factor Model for the Hypothesis Suggested by the EFA

Structural Equation Modeling

Structural Equation Modeling (SEM) is a sophisticated data analysis procedure that allows one to analyze causal relationships among observed and unobserved (latent) variables, and it provides estimates for improving the causal model (Byrne, 2010). As previously discussed, an exploratory factor analysis (EFA) identified five factors: Confidence, Incompetent, Lacks Social Skills, Perception Leader, and Makes a Difference. In SEM, as with CFA, such factors are referred to as latent variables. Consequently a path diagram modeling these five latent variables was created in AMOS (see Figure 4.7). These latent variables were identified as either exogenous latent variables or endogenous latent variables. Exogenous latent variables are independent of external effect and usually affect one or more other latent variables in the model. Endogenous latent variables are dependent; that is, they are affected by other latent variables or external factors (Byrne, 2010).

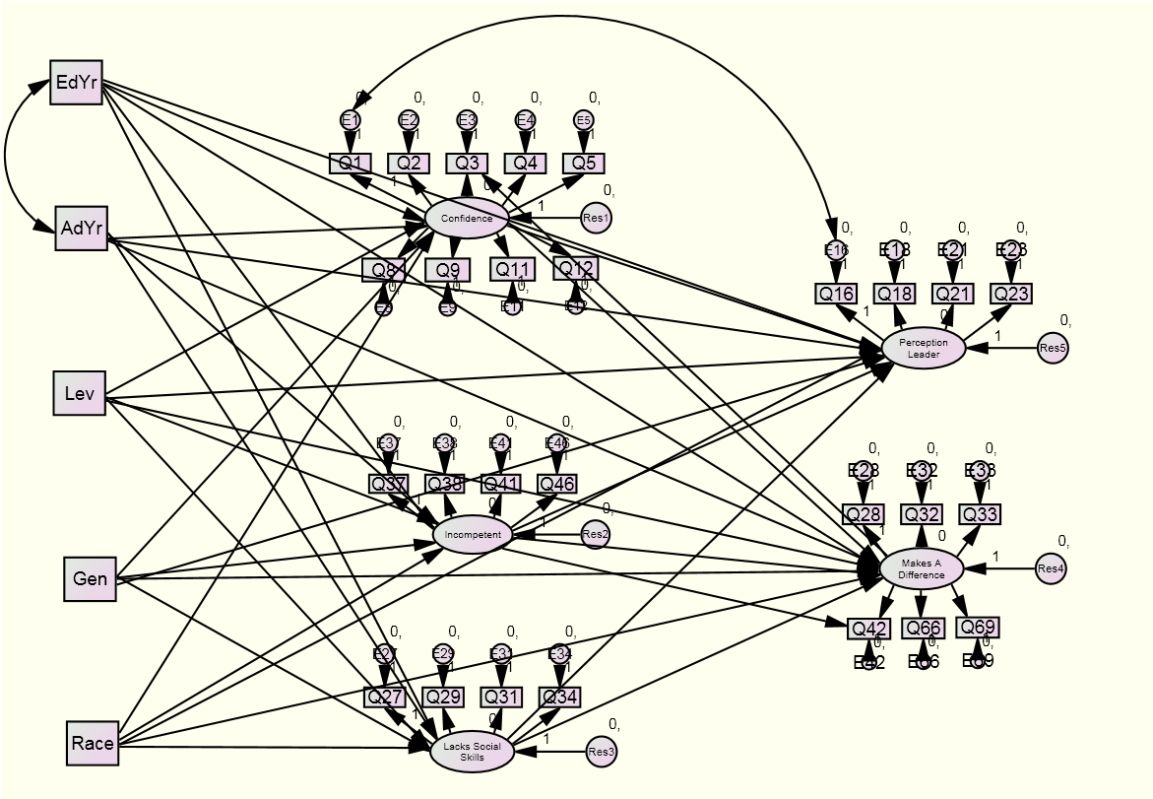


Figure 4.7

Initial Causal Model of Relationships Among Latent Variables and Select Observed Variables (Latent variables are defined by the CFA for the five-factor hypothesis.)

Using the latent variables as the core of the model, a path diagram representing a five-factor model was proposed and tested using structural equation modeling (SEM). The EFA and CFA analyses previously identified three types of principals: (a) confident leaders, (b) incompetent leaders, and (c) leaders lacking social skills. These variables describe characteristics or traits that leaders may exhibit to differing degrees; collectively they are labeled as distal traits and are called *leader type* variables. The remaining two latent variables are working to make a difference (Makes A Difference) and perceived

leadership (Perception Leader). These variables relate to what a principal does, or how he or she expresses personality traits, and are collectively called the *expression* variables. Consequently, the three distal trait variables are modeled as causal agents for the leadership expression variables.

Five demographic identifiers were available from the survey: gender, number of years as an educator, years as an administrator, school level (high school, middle school, elementary school, etc.), and race. These identifiers were included because the literature indicates that they may contribute to leadership. There is extensive evidence in the exitsting literature that gender influences leadership outcomes (see, for example, Fletcher, 2004; Shakeshaft, 1984). Research is available that examines leadership in terms of years of experience; such research implies that a difference may exist between beginning and expereinced leaders (e.g., Mumford et al., 2000; Goldring et al., 2009; Spillane et al., 2009). Although in a different context, the Army study discussed in Chapter 2 (Mumford et al., 2000) indicates that certain types of leaders are more prevelant among particular levels (junior-level, mid-level, and senior-level positions of leadership). Finally, race likewise has been found to differentially affect leadership (e.g., Ospina & Foldy, 2009).

In the initial causal path, the demographic variables are exogenous because they temporally occurred before the other variables (see Heise, 1975). The five latent variables are identified as either distal attributes or proximal attributes. The leadership type variables, Confidence, Incompetent, and Lacks Social Skills were designated as distal attributes; they are personality characteristics that logically derive from life experiences,

and they preceed the proximal, or expressive, variables (Makes A Difference and Perception Leader) both logically and temporally.

As with CFA, SEM is performed in steps. In the first analysis of the path diagram, demographic variables EdYr (number of years as an educator), AdYr (number of years as an administrator), Lev (level of school, i.e. elementary, high, etc.), Gen (gender), and Race were identified as external, or exogenous, factors. The initial hypothesis was that each of them influenced all of the latent variables. Prior to completing the first analysis, it was noted that two of the 178 respondents had each omitted one demographic question each. Certain crucial statistics produced by SEM are intolerant of missing data. To address this problem, the mean for number of years as an educator (= 4) was placed in the vacancy for one of the respondents and the mean for school level (= 3) was used for the other respondent.

In the first analysis of the path model, all five latent variables were endogenous variables. It was hypothesized that the three types of leaders (Confident, Incompetent, and Lacks Social Skills) each caused the expression variables (Perception Leader and Makes A Difference). Findings from the CFA related to covariances and cross loadings also were included in the model. Those indicators included a covariance between the error of Q1 (talkative) and the error of Q16 (generates enthusiasm); Q42 (cooperates) cross-loaded to Incompetent while Q3 (does thorough job) cross-loaded to Makes a Difference. A covariance was also assigned to the demographic variables EdYr and AdYr because of the possibility that the two are correlated. This covariance was based on the

fact that in South Carolina a person must have teaching experience prior to becoming an administrator.

This initial SEM produced a set of acceptable statistics; however, each value was improvable. The model fit summary provided a CMIN of 691.06 with 434 degrees of freedom (see Table 4.17). The comparative fit index (CFI) compares the proposed model with a model in which the latent variables are uncorrelated. The CFI should be greater than or equal to .9; this step produced a value of .91. The root mean square error of approximation (RMSEA) measures the discrepancy per degree of freedom. An adequate fit is considered to be the case if the value is less than or equal to .08, and a good fit is defined by a value less than or equal to .05. This model produced a value of .06. The Expected Cross-Validation Index (ECVI) provides a measure of how the model might cross-validate if applied to a similar-sized sample from the same population. An ECVI can take on any value, so one looks for improvement by checking to see that the value is smaller than the value associated with the saturated and independence models, that it lies within the confidence interval, and that it reduces with each subsequent analysis of the model (Byrne, 2010). This initial analysis produced an ECVI of 5.33, which was smaller than the values associated with the saturated and independence models and did lie in the confidence interval of 4.95 to 5.76. The Covariance table of Modification Indices indicated that a covariance needed to be added between demographic variables Lev and Gen. The Regression Weights table of the Modification Indices indicated that a causal path needed to be added from Incompetent to Lacks Social Skills, from Lacks Social Skills to Confidence, and from Incompetent to Confidence.

Table 4.17

Five-Factor Model – Goodness-of-Fit Indices from Initial SEM Analysis

Index	**Value**	**Recommended Value for Acceptance**
CMIN	691.06	Must compare to subsequent analyses
DF	434	
CFI	.91	>.9
RMSEA	.06	≤.05 for good fit
ECVI	5.33	Must compare to subsequent analyses

With these adjustments, the second analysis produced improved statistics. The model fit summary provided a CMIN of 631.26 with 430 degrees of freedom (down from 691.06 in the initial analysis). The CFI improved to .93. The RMSEA reached .05 therefore indicating a good fit for the model. The ECVI reduced to 5.04 with a confidence interval of 4.68 to 5.44, which was an improvement from the first iteration (5.33). From the Modification Indices it was determined that no additional paths needed to be added, so my attention turned to removing causal paths that were not statistically strong. The critical ratios from the Regression Weights table of the Estimates indicated that the causal paths from years as an educator and school level needed to be removed from all five latent variables (see Table 4.18). Typically one looks for values less than 1.96; in an effort to remove only a few causal paths at a time, I elected initially to remove causal paths with values of less than one. This table also indicated that the paths needed to be removed from years as an administrator to Incompetent and Lacks Social Skills; the paths also needed to be removed from race to Lacks Social Skills, Confidence, and Perception Leader. As a result of these deleted paths, the demographic variables EdYr

and Lev were completely removed from the model because they did not cause any of the five latent variables.

Table 4.18

Regression Weights from SEM Analysis of Five-Factor Model

		Estimate	S.E.	C.R.	P
Incompetent	<--- EdYr	-.040	.091	-.438	.662
Incompetent	<--- AdYr	-.036	.073	-.491	.623
Incompetent	<--- Lev	.040	.070	.566	.571
Incompetent	<--- Gen	-.162	.154	-1.053	.292
Incompetent	<--- Race	.191	.097	1.977	.048
Lacks Social_Skills	<--- EdYr	-.031	.097	-.318	.750
Lacks Social_Skills	<--- AdYr	-.065	.078	-.833	.405
Lacks Social_Skills	<--- Lev	.038	.075	.504	.614
Lacks Social_Skills	<--- Gen	-.175	.164	-1.066	.286
Lacks Social_Skills	<--- Race	.021	.104	.205	.838
Lacks Social_Skills	<--- Incompetent	.337	.092	3.652	***
Confidence	<--- EdYr	.033	.065	.509	.611
Confidence	<--- AdYr	.081	.052	1.556	.120
Confidence	<--- Lev	-.036	.050	-.727	.467
Confidence	<--- Gen	.412	.114	3.628	***
Confidence	<--- Race	.032	.069	.463	.643
Confidence	<--- Lacks Social_Skills	-.201	.062	-3.265	.001
Confidence	<--- Incompetent	-.171	.065	-2.635	.008
Perception_Leader	<--- EdYr	-.070	.090	-.772	.440
Makes A_Difference	<--- EdYr	.020	.038	.519	.604
Perception_Leader	<--- AdYr	.109	.073	1.501	.133
Makes A_Difference	<--- AdYr	-.041	.031	-1.310	.190

Table 4.18

Regression Weights from SEM Analysis of Five-Factor Model (Continued)

			Estimate	S.E.	C.R.	P
Perception_Leader	<---	Lev	.022	.070	.313	.754
Makes A_Difference	<---	Lev	.015	.030	.511	.610
Perception_Leader	<---	Gen	.226	.160	1.414	.157
Makes A_Difference	<---	Gen	-.187	.071	-2.644	.008
Perception_Leader	<---	Race	-.027	.096	-.284	.776
Makes A_Difference	<---	Race	.058	.041	1.391	.164
Perception_Leader	<---	Confidence	.072	.114	.632	.527
Makes A_Difference	<---	Confidence	-.023	.049	-.469	.639
Perception_Leader	<---	Incompetent	-.085	.090	-.944	.345
Makes A_Difference	<---	Incompetent	-.059	.040	-1.476	.140
Perception_Leader	<---	Lacks Social_Skills	-.259	.088	-2.947	.003
Makes A_Difference	<---	Lacks Social_Skills	-.076	.038	-2.008	.045
Q1	<---	Confidence	1.000			
Q2	<---	Confidence	-1.155	.117	-9.862	***
Q3	<---	Confidence	.868	.089	9.781	***
Q4	<---	Confidence	-1.613	.135	-11.916	***
Q5	<---	Confidence	1.241	.119	10.389	***
Q8	<---	Confidence	-1.401	.122	-11.467	***
Q9	<---	Confidence	1.389	.129	10.771	***
Q11	<---	Confidence	1.284	.118	10.856	***
Q12	<---	Confidence	-1.689	.140	-12.024	***
Q37	<---	Incompetent	1.000			
Q38	<---	Incompetent	-.956	.077	-12.333	***

Table 4.18

Regression Weights from SEM Analysis of Five-Factor Model (Continued)

		Estimate	S.E.	C.R.	P
Q41	<--- Incompetent	.959	.093	10.351	***
Q46	<--- Incompetent	-1.060	.086	-12.328	***
Q27	<--- Lacks Social_Skills	1.000			
Q29	<--- Lacks Social_Skills	.997	.083	11.996	***
Q31	<--- Lacks Social_Skills	.742	.076	9.812	***
Q34	<--- Lacks Social_Skills	-.818	.074	-11.036	***
Q28	<--- Makes A_Difference	1.000			
Q32	<--- Makes A_Difference	1.260	.185	6.826	***
Q33	<--- Makes A_Difference	.943	.145	6.501	***
Q16	<--- Perception_Leader	1.000			
Q18	<--- Perception_Leader	-.849	.080	-10.642	***
Q21	<--- Perception_Leader	.555	.066	8.430	***
Q23	<--- Perception_Leader	-1.375	.105	-13.152	***
Q42	<--- Makes A_Difference	1.082	.160	6.761	***
Q66	<--- Makes A_Difference	.894	.153	5.864	***
Q69	<--- Makes A_Difference	.972	.141	6.908	***
Q3	<--- Makes A_Difference	.512	.146	3.501	***
Q42	<--- Incompetent	.192	.046	4.216	***

The next analysis indicated that further path deletions were needed. As a result of this analysis, I removed all paths that presented a critical ratio less than 1.96. As a result, gender needed to be removed from Incompetent, Lacks Social Skills, and Perception Leader. Years as an administrator needed to be removed from Perception Leader and Makes A Difference. Race needed to be removed from Incompetent and Makes a Difference. The statistical values improved as a result. The CMIN reduced to 561.05 with

386 degrees of freedom while the CFI increased to .94. The RMSEA remained at .05, and the ECVI dropped to a value of 4.40 with a confidence interval of 4.07 to 4.78. Once the paths were deleted (as discussed at the beginning of this paragraph), Race no longer had any causal effects and was removed from the model. At this point Incompetent became an exogenous variable rather than an endogenous one because it had no other variables influencing it.

With these adjustments to the model, the fourth analysis again provided improved or stable statistical values. The CMIN reduced to 530.32 with 364 degrees of freedom. The CFI remained at .94 while the RMSEA remained at .05. The ECVI reduced to 4.13 with a confidence interval of 3.80 to 4.50. I again returned to the critical ratios of the Regression Weights table of the Estimates. This time, four causal paths presented with values less than 1.96. As a result, the paths were removed between Confidence and Perception Leader, Incompetent and Perception Leader, Confidence and Makes A Difference, and Incompetent and Makes A Difference.

These changes to the model created an increase in the CMIN and the degrees of freedom; however, the other statistical values in the fifth analysis either improved or remained the same. The CMIN increased to 535.10 with 368 degrees of freedom. The CFI remained at .94 and the RMSEA remained at .05. The ECVI reduced to 4.11 with a confidence interval of 3.78 to 4.48.

As a result, this parsed model became the final path diagram for my leadership model (see Figure 4.8). In this path diagram, Incompetent is an exogenous latent variable in that it is independent and affects two of the other latent variables. Confidence, Lacks

Social Skills, Perception Leader, and Makes A Difference are endogenous latent variables; they are dependent and are affected by another latent variable or an external factor. Number of years as an administrator and gender are external factors affecting two of the endogenous latent variables. Table 4.19 provides a summary of the path coefficients among variables for the five-factor model. Table 4.20 provides a summary of the amount of explained variance for each of the endogenous latent variables.

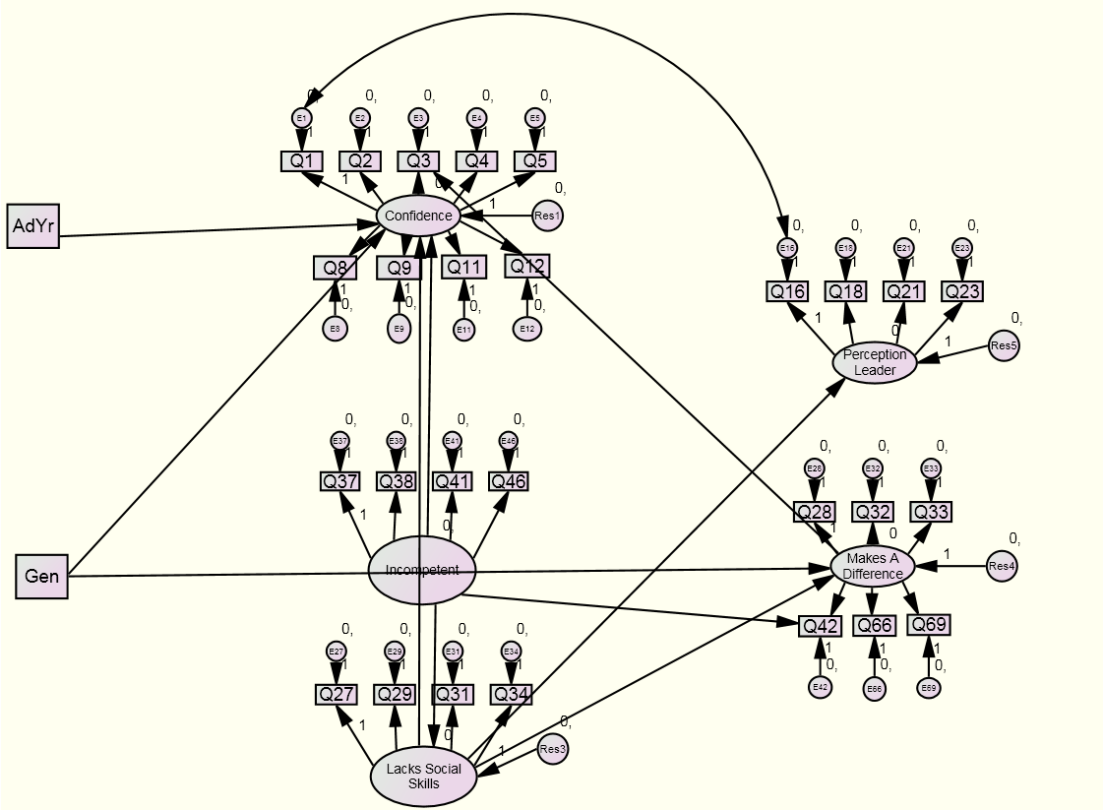


Figure 4.8

Final Model for the Five-Factor Model of Leadership Traits

Table 4.19

Path Coefficients for the Five-Factor Model

Variable "causing"	Variable being influenced	Amount of influence
Incompetent	Lacks social skills	.34
Years in administrations (AdYr)	Confidence	.17
Gender (Gen)	Confidence	.29
Gender (Gen)	Makes a difference	-.24
Lacks social skills	Perception leader	-.35
Lacks social skills	Makes a difference	-.21
Lacks social skills	Confidence	-.27
Incompetent	Confidence	-.20

Table 4.20

Explained Variance by the Five-Factor Model

Endogenous Variable	Amount of Explained Variance
Lacks social skills	.11
Perception leader	.12
Makes a difference	.10
Confidence	.27

Summary of Findings

This study's goal was to examine the distal and proximal attributes of persons who occupy the principalship. Based on the literature review and other proposed models (Zaccaro et al., 2004; Conneley et al., 2000), the study analyzed the relationships between three distal attributes: personality, cognitive abilities, and motives and values, and four proximal attributes: problem-solving, social appraisal skills, expertise and tacit

knowledge, and sensemaking. However, the data analysis revealed that these proposed attributes by Zaccaro et al. (2004) did not fit the data provided by the principals. Instead, a new leadership model was created from the data with five new attributes (three distal and two proximal).

Despite the relatively strong path coefficients and the good fit of the data to the new leadership model, the structural equation model does not explain an impressive amount of variance in the model (see Table 4.18). The distal attribute Confidence explains the greatest amount of variance (.27), whereas the proximal attribute Makes A Difference explains only .10 of the variance. In the end, a model supporting the propositions of Zaccaro et al. (2004) was unattainable, and the model identified to replace it, while statistically significant, had relatively weak explanatory power.

CHAPTER FIVE

DISCUSSION

This study explored the impact of personal attributes on the principalship by examining distal and proximal attributes. In prior research, Connelly et al. (2000) and Zaccaro et al. (2004) identified six attributes that this study sought to measure: personality, cognitive abilities, motives and values, problem-solving, social appraisal skills, and expertise and tacit knowledge. In addition to these traits, I added sensemaking.

I collected survey data for this study from 178 principals in 23 school districts across South Carolina. The survey instrument consisted of 69 questions with Likert scale responses and five demographic questions. Data were analyzed using EFA, CFA, and SEM. This sophisticated data analysis failed to support Zaccaro et al.'s (2004) leadership model; instead, a new leadership model emerged.

Confirmatory Factor Analysis: Failed Model

The CFA failed to support the proposed model of Zaccaro et al. (2004) in that the survey items used in the present study (and recommended by Connelly, a colleague of Zacarro) did not load on the specific traits Zaccaro et al. identified. This result may be attributable to one (or a combination) of things. First, Zaccaro et al. did not test their model but instead merely formulated a hypothesis that was not supportable. Second, there may be important differences between the way armed forces personnel perceive leadership (as measured by Connelly et al., 2000) and the way the principals in my study perceive leadership. Third, my sample portrayed attitudes about leadership in terms of

behavior and action rather than personality traits. Finally, my study relied on statistical procedures that may have revealed information not available with less robust analyses.

The first reason for the differences between my model and that of Zaccaro et al. (2004) is the fact that my model was, in fact, tested empirically. In two different publications (Zaccaro et al. 2004; Zaccaro, 2007) literature was used to support the assertions underlying the model, but the model itself was not tested with empirical data. Thus, this current study has failed to support Zaccaro's hypotheses.

The second reason for the failed model may rest in divergences between the survey instrument and the participants for the two studies. The instrument used for this study needed to measure the identified attributes, yet not be too time consuming for the principals to complete. Participation in the study was voluntary, and I did not want principals to feel that I was demanding a large amount of time away from their job responsibilities. Consequently, I used a 69-item instrument with Likert response scales (plus five demographic questions) to collect data for the current study. Connelly et al. (2000), whose data provided a partial basis for the model proposed by Zacarro et al. (2004), measured six of the attributes in a study involving 1,807 Army officers. Their instrument, completed by Army officers, was time consuming; it consisted of military-related, constructed response measures (questions requiring written paragraphs for a response) that required several hours to complete. Completion of such a lengthy instrument by school principals was not appropriate for this study. Having been an administrator myself, I knew that requesting constructed response items would not appeal

to busy principals. Perhaps if constructed response questions had been used as part of the survey, the analysis may have provided different results.

Also contributing to the failed support may be the inherent differences between the populations studied. Zaccaro et al.'s (2004) model was based on a more inclusive model proposed by Mumford et al. (2000) that was partially tested by Connelly et al. (2000) among Army officers (Mumford, Connelly, and Zaccaro are all colleagues who write with one another, and who typically develop related research studies). Without question, there are differences between the military officers in that study and the principals in my study. Perhaps one model cannot compare results from military leaders and educational leaders.

The third possible reason for the differences may have related to the respondents' mindsets in answering the survey questions. A portion of the survey was derived from the Big Five Measures, a measure of personality dimensions produced by Berkley Personality Lab (John, Naumann, & Soto, 2008; John, Donahue, & Kentle, 1991; Benet-Martinez & John, 1998); I developed and included a few additional questions. Principals responded about leadership in general (per my request); they did not respond specifically about their own personality traits. The difference is in "how I see leadership" and "how I see myself." The Big Five Measures scale originally asked, "how do I see myself." Since Connelly recommended the Big Five Measures, I assume that the model that group of researchers intended assumed the personal interpretation of the scale, and I may have gotten different results with that interpretation.

The fourth reason for the failure of the Zaccaro et al. model may be the sophisticated analyses, EFA, CFA, and SEM, that I used. SEM allows data analysis of both observed and unobserved (or constructed) variables and adjusts for covariances among variables. In addition, SEM estimates and adjusts for error terms that other analyses ignore; these error estimates may be critical in determining the explanatory power of a model. SEM also confirms rather than explores models, and therefore allows for detailed hypothesis testing.

Exploratory Factor Analysis

During the EFA, the expected seven-factor model proposed by Zaccaro et al. (2004) did not emerge from the data. Instead, the scree plot indicated that either five or nine factors were present in the data. When analyzed, the nine-factor model failed to converge (meaning fewer than nine factors were present); therefore, analysis continued with the five-factor model. Subsequent analysis of the exploratory factor analysis (EFA) data supported a five-factor model that differed significantly from the model proposed by Zaccaro et al. (2004). Elements of distal and proximal attributes were embedded within the five factors that were identified, but not all seven of the expected attributes were represented. Specifically, survey questions related to Zaccaro et al.'s personality, cognitive abilities, social appraisal skills, problem solving, and expertise and tacit knowledge were embedded within the newly identified five factors. Questions related to motives and values and to sensemaking were absent from my model because they failed to load at a .6 level of significance on any of the five factors identified by the EFA.

Rather than identifying three distal attributes and four proximal attributes (as expected), my factors identified three types of principals and two expressions of those personality types. The three types of principals were (a) confident leaders, (b) incompetent leaders, and (c) leaders lacking social skills. My post hoc model implies that these leaders express their *leader type* attributes in one of two ways: by working to make a difference (Makes A Difference) or by displaying an air of leadership (Perception Leader).

The first leader type is Confidence (meaning a confident leader). These principals are confident in both their position and their ability to to carry out the duties of the principalship. These leaders are upbeat, talkative, and full of energy. They do not typically find fault with others, nor do they start quarrels. These principals are original, do a thorough job, and tend to handle stress well. Contained in Confidence were questions intended to measure personality and cognitive abilities, and social appraisal skills. This type of principal is likely the kind most district offices would like to hire and for whom most teachers would want to work. In general, being this type of leader is an asset and Confidence is a bright leadership trait. Judge et al. (2009) identified a similar trait, core self-evaluations (CSE), in their discussion of bright and dark leader traits. Just as Judge et al. pointed out that hyper-CSE can lead to narcissism and hubris, I must point out that too much confidence can lead to narcissism and hubris in a principal.

The second leader type is Incompetent. These principals are incompetent in their ability yet they either do not realize their shortcomings or refuse to acknowledge them. This type of leader may be the worst of the three because they lack the necessary traits,

skills, and knowledge for the position, yet pretend as though they possess them. These principals are sometimes rude and fail to follow through on tasks. In many cases, they lack expertise in the educational field. The identification of this type of principal is reminiscent of the writings of Katz (1955). Katz (1955) suggested that it was more important to examine what leaders *do* rather than what leaders *are*. This type of principal is one that no district office is likely to want leading their schools. Without question, incompetence is dark in nature; it is difficult to find a bright side to this trait because leadership by an incompetent principal can quickly lead to a myriad of problems for a school.

The third leader type is Lacks Social Skills (meaning a leader who is socially challenged). These principals are socially immature and lack people skills. They are often cold, aloof, moody, and shy. These principals typically do not remain calm in tense situations. This type of principal is one who can complete the job; however, no prize for personality will be won in the process. While interpersonal relationships may not be prerequisite for leadership (for example, Uhl-Bien, Marion, and McKelvey, 2007, emphasize skills in maneuvering network dynamics), they certainly are an asset, particularly in relationship-intensive organizations such as schools. In terms of brightness and darkness, then, Lacks Social Skills is better labeled as dark in the context of education.

My model indicates that these types of principals *express* their leadership in one of two ways, by either making a difference or by displaying an air of leadership. The first expression of leadership is Makes A Difference. These principals are determined to make

a difference within their schools and in the lives of students. They are kind, considerate, and cooperative. These principals continuously build upon their knowledge base by attending workshops and conferences. Principals who lead with the intention of making a difference are persisitent and persevere until tasks are finished. This type of principal was also identified by Gurr et al., (2006).

Given that principals themselves responded to this survey indicates their tacit acknowledgement that some leaders are in the education profession because they wish to develop and contribute to the lives of children. Some educators view the profession as a *calling*. These persons may be the *difference makers*. In administration, the contact and opportunities one has for interacting with and influencing students are very different from those of the classroom teacher. For this reason, principals may occassionally feel that the pressures of the job do not not allow them to make the difference they wish to make.

In terms of brightness and darkness, Makes A Difference is a bright trait. Teachers, parents, students, district office staff, and the community look for administrators who are in education for the *right* reasons. They want a principal always to be mindful of the children in that building and to work with them to improve the lives of those children. As previously discussed, bright traits may also have dark sides. Makes A Difference's dark side exists in that this type of principal may fail to follow policy and procedures in attempts to make a difference.

The second expression of leadership is Perception Leader (referring to a leader who gives off an air of leadership). These principals look the part, act the part, and talk the part, and therefore they are pereceived as leader-like by stakeholders. The ability to

create such perception is invaluable to principals, both in good times and in challenging times. For example, when faced with a situation in which the leader is uncertain about the appropriate course of action, this trait will serve him or her well. The principal's uncertainty may be hidden by the ability to socially play the part expected by stakeholders; these principals may pretend to be whatever or however they deem is expected by the teachers, parents, students, district office staff, and community. Similarly, Guastello (2007) discussed the emergence of verbally competent leaders within leaderless groups.

In general, Perception Leader can be interpreted as a bright trait. This brightness comes from the social and verbal competency of principals. However, as with other traits, a dark side also exists. In some cases, principals may be verbally competent yet when it comes to the daily responsibilities associated with leadership, they are task unexpressive (they fail to follow through). When the dark side of Perception Leader is expressed, these principals may be lazy and fail to generate enthusiasm in their schools; perhaps they are inept in the day-to day skills required of the principalship. They may be loud and disorganized in their leadership.

When compared with Makes A Difference, Perception Leader is also a bright trait. Stakeholders likely would want a principal who is verbally competent and appears leader-like. Such a trait is valuable to leaders, as many in today's educational arena would acknowledge that principals need the verbal skills associated with Perception Leader; it is important for educational leaders to present themselves in the manner that is

expected by their stakeholders. Principals need to exude confidence and have the right words available when attention shifts to them.

Confirmatory Factor Analysis

I also conducted a confirmatory factor analysis (CFA) of the exploratory model generated by the EFA. The initial analysis of my five-factor model provided values that indicated adequate fit, and with modifications to the model, better fit was attained. The statistical values for my five-factor model were consistently better than the values obtained from a CFA on the model proposed by Zaccaro et al. (2004) plus sensemaking. As a result, I tested my new leadership model using structural equation modeling (SEM).

Structural Equation Modeling

The new model identified three types of principals and two expressions of those leader types. The three types of principals include (a) confident leaders, (b) incompetent leaders, and (c) leaders lacking social skills. My five-factor model implies that these leaders express their *leader type* attributes in one of two ways: by working to make a difference (Makes A Difference) or by displaying an air of leadership (Perception Leader). The SEM provided information about the causal paths (see Figure 5.1) among the identified variables and the demographic variables measuring years in education, years in administration, gender, school level (elementary, middle, etc.), gender, and race.

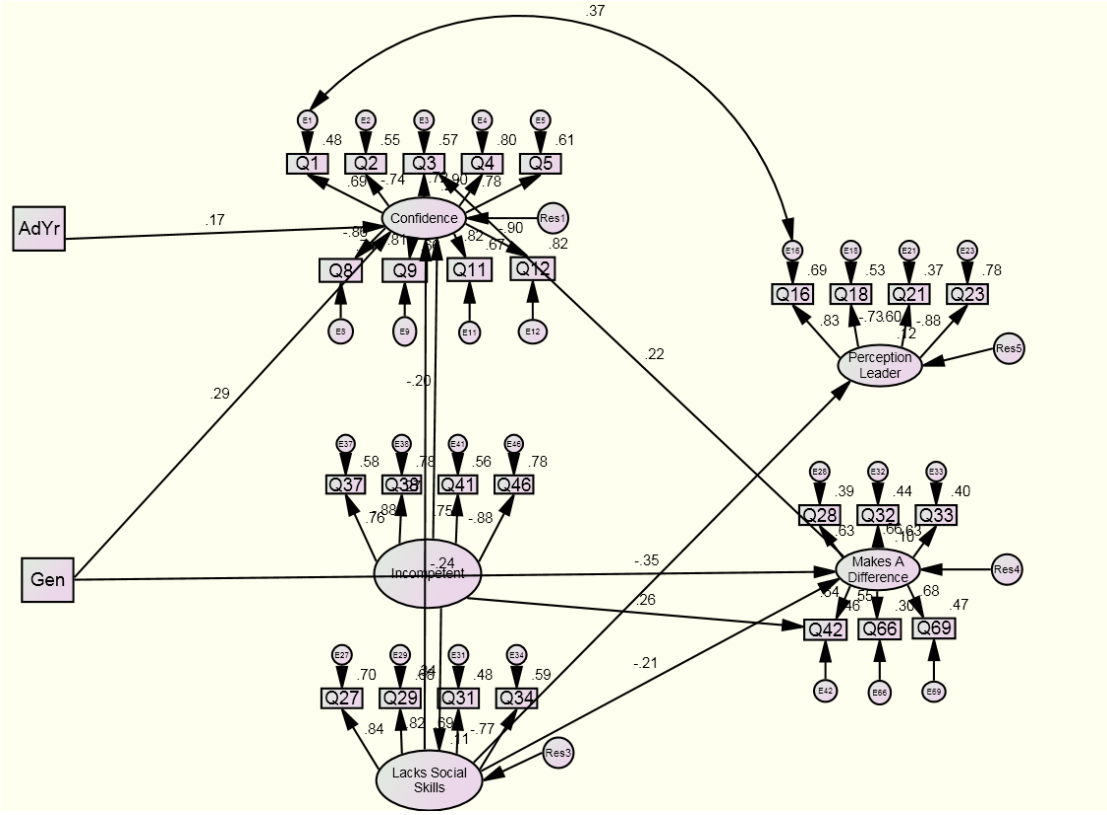


Figure 5.1

Final Model of Leadership Traits (see also Table 4.19)

The identification of these three leader type variables and two expression variables suggests that there is more to leadership than attributes; that is, trait theory may have weak explanatory power and the decision to abandon it in the 1960s was perhaps correct. Even with the interrelated attributes suggested by Zaccaro et al. (2004) and Zaccaro (2007), traits are not enough to explain the actions and decisions of principals to a significant degree. The Zacarro model upon which this study was originally based focused on personal qualities (personality, cognitive abilities, motives and values, problem-solving, social appraisal skills, expertise and knoweldge, and sensemaking). The

relationships within my model indicate that it is one's ability to carry out the job and how one interacts with others that matters.

I initially argued that causal paths existed between each of the demographic identifiers and the model's latent variables. I also argued that each of the leader types caused both of the expression variables. However, not all of these causal paths were confirmed, and the model was parsed to the statistically significant causal paths as a result.

Only two demographic variables, years in administration and gender, were found to cause endogenous latent variables. Not surprisingly, there is a positive path coefficient (.17) between years as an administrator and confidence (the causal path between years in education and the confidence latent variable probably washed out because years as an administrator and years as an educator explain common variance). In other words, the longer a principal works in administration the more confident he or she is likely to be on the job.

Gender exhibited some interesting causal paths. A positive path coefficient (.29) is present between principal's gender and confidence. This positive relationship indicates that female principals are more confident than men are. Perhaps this finding is an example of *female advantage* associated with postheroic leadership (Fletcher, 2004):

> What this means is that when women enact the kind of leadership practices that share power or enable and contribute to the development of others, they are likely to be seen as selfless givers who 'like helping' and expect nothing in return. In other words, when women use their relational skills to lead, their behavior is likely to be conflated not only with femininity but with selfless giving and motherhood. (Fletcher, 2004, p. 655)

If women are leading with skills that society views as feminine, then it makes sense that they lead with more confidence than men.

The analysis also found a negative relationship (-.24) between gender and making a difference. This negative correlation indicates that male principals are more likely than females to strive to make a difference in their roles. Again, this finding may be rooted in *doing gender* associated with postheroic leadership. Society views women as nurturing and mothering. In the education field, women also are expected to possess this spirit of care giving; therefore, when women practice leadership in this manner it is often taken for granted. On the other hand, society does not expect men to lead in such feminine ways and when they do, it is quickly recognized. These feminine ways are much like the variable Makes A Difference. Perhaps men in education who display a spirit of care giving are identified as doing something outside their gender. Consequently, their *labors of love* (Fletcher, 2004) are detected in this study.

The exogenous variable Incompetent caused both Confidence (-.20) and Lacks Social Skills (.34). The analysis indicates that the more competent one is, the more confident he or she likely is. This causal path is a natural one in that competency and confidence go hand in hand. For example, if principals are competent in their job, then they act in a manner that exudes confidence. Similarly, if a principal lacks social skills, he or she may be perceived as incompetent. Therefore, it is not surprising that the analysis also indicates that the more incompetent one is, the more a principal lacks appropriate social skills.

The endogenous variable Lacks Social Skills was rather influential in the model; moderately strong causal coefficients were present between it and three other latent variables: Perception Leader (-.35), Makes A Difference (-.21), and Confidence (-.27). The analysis indicates that the more socially immature a principal is the less likely he or she tends to be perceived as a leader. The model also indicates that the more socially mature a principal is, the more he or she tends to make a difference, and the more confident he or she is. The educational political arena requires a certain level of social maturity so that principals are able to interact successfully (by saying and doing the *right* things at the right times) with stakeholders. While it is positive (bright) when a leader is socially mature, it quickly translates to darkness if the trait is used for obvious personal gain rather than actually leading. The bright side of being socially mature remains bright if leaders use the trait to better the lives of their students.

The above direct causal relationships are interesting; however, perhaps the paths that are missing from the model and the indirect causal relationships are equally interesting. Although Confidence is present as a leader type, it does not link causally to whether a leader is perceived as a leader or a difference maker. I find it surprising that Confidence does not have a causal path to the expression variables. It would seem that a certain amount of confidence is needed to lead, regardless of how one leads. Incompetent also fails to link directly to the expression variables but does link to them indirectly through Lacks Social Skills. This indirect causal path can be calculated by multiplying the path to Lacks Social Skills times the path to the respective expression variable. The indirect path from Incompetent through Lacks Social Skills to Perception Leader is -.119

(.34 x -.35). The indirect path from Incompetent through Lacks Social Skills to Makes A Difference is -.071 (.34 x -.21). This indirect relationship is interpreted such that an increase in competence and social skills results in constituents perceiving principals as leader-like. Likewise, in terms of the relationship between Incompetent and Makes A Difference, an increase in competence and social skills also results in a principal being a difference maker.

Despite the relatively strong path coefficients and good fit of the data to the new leadership model, however, the structural equation model did not explain an impressive amount of variance in the model (see Table 4.20). Confidence was the most thoroughly explained variable (.27), while Makes A Difference was the least (.10). Perhaps the main reason the model has so little explanatory power is that only one of the leader type variables possesses a direct causal relationship with the two expression variables. I expected that each of the leader type variables would have had some causal strength with the expression variables. With so little variance explained I must conclude that while this model explains some of the expressed leadership of principals, and although several path coefficients are statistically significant, I am sufficiently concerned about the unexplained variance to conclude that traits do not have viable explanatory power for leadership studies. Although many attempts have been made to define leadership in terms of a particular set of traits (this study included), it may not be realistic to do so. If trait theory were fully explanatory, then orgainzations, businesses, and schools could easily identify the *right* person for the job simply because he or she meets the leadership profile. However, leadership is not a cookie-cutter skill; it requires more than a list of traits to

identify a leader or to be a leader. Trait theory is not enough to explain leadership, but it can help us understand some components of this complicated concept.

Summary

This study produced a new leadership model of the principalship. My model identified three leader type variables (Confidence, Incompetent, and Lacks Social Skills) and two expression variables (Makes A Difference and Perception Leader). Despite the fact that it emerged from my data and obtained relatively strong path coeffcients, my structural equation leadership model was unable to explain a significant amount of variance in the model (see Table 4.20). In the end, a model was unattainable that supported the propositions of Zaccaro et al. (2004) and only weakly supported the alternative model identified in the study. Rather than lending support (which was my intent), this study adds to the criticism of trait theory.

Future Research

Although the data associated with this study failed to support the proposed trait related hypotheses, there is value in the information that is obtained. This study indicates that the reality associated with leadership is not concrete, rather it is constructed by those associated it with it. Both leaders and followers create their own realities about leadership. Future research might examine the realities according to leaders in contrast to the realities constructed by followers. Another possibility for future research might involve the comparison of constructed realities of educational leaders to those of leaders

in other career fields. While trait theory fails to explain all components of leadership, I believe that it is irresponsible of us to completely dismiss traits from our leadership models and research.

APPENDICES

Appendix A

Letter of Approval from IRB

Validation of IRB Protocol #2010-129: An Exploration of Leader Attributes and the Principalship

Dear Dr. Marion,

The Chair of the Clemson University Institutional Review Board (IRB) validated the protocol identified above using Exempt review procedures and a determination was made on **May 12, 2010**, that the proposed activities involving human participants qualify as Exempt from continuing review under category **B2,** based on the Federal Regulations (45 CFR 46) **for all research sites with support letters on file with the IRB**. You may begin this study.

Please remember that no change in this research protocol can be initiated without prior review by the IRB. Any unanticipated problems involving risks to subjects, complications, and/or any adverse events must be reported to the Office of Research Compliance (ORC) immediately.

We also ask that you notify the ORC when your study is completed or terminated.

Please review the Responsibilities of Principal Investigators (available at http://www.clemson.edu/research/compliance/irb/regulations.html) and the Responsibilities of Research Team Members (available at http://www.clemson.edu/research/compliance/irb/regulations.html) and be sure these documents are distributed to all appropriate parties.

Good luck with your study, and please feel free to contact us if you have any questions. Please use the IRB number and title in all communications regarding this study.

All the best,
Nalinee

Nalinee D. Patin
IRB Coordinator
Clemson University
Office of Research Compliance
Institutional Review Board (IRB)
Voice: (864) 656-0636
Fax: (864) 656-4475

E-Mail: npatin@clemson.edu <mailto:npatin@clemson.edu>
Web site: http://www.clemson.edu/research/compliance/irb/
http://www.clemson.edu/research/compliance/irb/

Appendix B

Letter to School Districts

May 11, 2010

Dear Superintendent/District Designee:

I am a fellow educator who is currently employed by Greenwood School District 50 as the Testing Coordinator. I am also a doctoral student at Clemson University in the area of educational leadership. For my dissertation I am conducting research under the direction of Dr. Russ Marion. My study is entitled "An Exploration of Leader Attributes and the Principalship;" I am studying the impact of principals' attributes on their job related decisions and actions. Specifically I will examine personality, cognitive abilities, motive/values, problem-solving skills, social appraisal skills, expertise/tacit knowledge, and sensemaking. All responses will be anonymous and there are no known risks associated with this research. A copy of the survey is included for your review.

To obtain the information I need for my dissertation, I need the assistance of your principals. Your principals will receive a brief survey by mail or e-mail. The survey contains 74 questions and should take approximately 10 minutes to complete. If you or your superintendent would be so kind, I would appreciate your district's permission to survey your principals. To give permission, please respond in writing by mail or e-mail. Please reply on or before June 11.

At the conclusion of my study, I will be glad to share the results with you and your district if you so desire. Please feel free to contact me with any questions that you might have.

Thank you for your time and assistance.

Sincerely,

Amy Gregory Young

Appendix C

Cover Letters to Principals

Information Concerning Participation in a Research Study
Clemson University

An Exploration of Leader Attributes and the Principalship

Description of the research and your participation
You are invited to participate in a research study conducted by Dr. Russ Marion, along with Amy Gregory Young. The purpose of this research is to explore the impact of principals' attributes on their job related decisions and actions. Attributes to be studied include personality, cognitive abilities, motives and values, problem-solving skills, social appraisal skills, sensemaking, and expertise/tacit knowledge.

Your participation will involve completing a brief 74 question survey. Sixty-nine of the questions are five point scale responses; five questions request demographic information.

The amount of time required for your participation will be approximately 10 minutes.

Risks and discomforts
There are no known risks associated with this research.

Potential benefits
There are no known benefits to you that would result from your participation in this research. This research may help us to understand the leadership of public school principals.

Protection of confidentiality
We will do everything we can to protect your privacy. Your responses to this survey will be anonymous. Your identity will not be revealed in the study itself nor anytime there after. No names will be used in any write-up. No school, district, or participating person will be identified. The returned paper surveys will be kept in a locked drawer and the data from the surveys will be kept in a password protected computer. The online responses will be kept in a password protected account. All data will be destroyed at the end of the research. It will not be possible for one to trace back to an individual using the study. Your identity will not be revealed in any publication that might result from this study.

Voluntary participation
Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.

Contact information
If you have any questions or concerns about this study or if any problems arise, please contact Dr. Russ Marion at Clemson University at 864.656.5105. If you have any questions or concerns about your rights as a research participant, please contact the Clemson University Office of Research Compliance at 864.656.6460.

June 10, 2010

Dear Principal:

I am a fellow educator who is currently employed by Greenwood School District 50 as the Testing Coordinator. I am also a doctoral student at Clemson University in the area of educational leadership. For my dissertation I am conducting research under the direction of Dr. Russ Marion. My study is entitled "An Exploration of Leader Attributes and the Principalship;" I am studying the impact of principals' attributes on their job related decisions and actions. Specifically I will examine personality, cognitive abilities, motive/values, problem-solving skills, social appraisal skills, expertise/tacit knowledge, and sensemaking. All responses will be anonymous and there are no known risks associated with this research. Please know that your participation in this research study is voluntary.

Your superintendent or your district's designee has given me permission to contact you and the other principals of your district. To obtain the information I need for my dissertation, I need your assistance with a brief survey. The survey contains 74 questions and should take approximately 10 minutes to complete.

I recognize that your time is valuable and I am striving to make your participation as easy and convenient as possible. You may participate in one of two ways: **(1)** complete the enclosed survey and mail it back to me **or (2)** go to this web address, http://www.surveymethods.com/EndUser.aspx?EECAA6BCEFA4BBB8EF and complete the survey.

Thank you for your time and for your assistance with my dissertation. Please accept the enclosed ink pen as a token of my appreciation for your participation.

Sincerely,

Amy Gregory Young

Appendix D

Reminder Emails to Principals

First Reminder

Dear Principal,

Two weeks ago you received a survey via snail mail concerning principals' attributes and their impact on job related decisions and actions. As a doctoral student at Clemson University, I am conducting this study under the direction of Dr. Russ Marion.

If you have already responded either by mail or online, THANK YOU! If you have not yet responded, please take five minutes to do so today. Your participation is extremely important to the quality of the study. Please click on the link at the bottom of this email to take the survey.

There are no known risks associated with this study. Your participation in the study is voluntary and your responses are anonymous. If you have questions about the survey, please e-mail me at younga@gwd50.org.

Thank you,
Amy Gregory Young

Click on the following link to take the survey: Click Here
Or copy and paste the following link in your browser to take the survey:
http://www.surveymethods.com/EndUser.aspx?D7E19F85D793808CD09586

Click on the following link to not take this and other surveys from us: Click Here
If clicking on the link does not work, copy and paste the following URL into your browser.
http://www.surveymethods.com/EndUser.aspx?D7EB9F85D793808CD09586

Second Reminder

Dear Principal,

Last month you received information from me in the mail and via e-mail. This correspondence asked you to assist me in my endeavors to obtain my Ph.D. by completing a brief survey. If you have already completed my survey, either a paper copy or online, THANK YOU. If you have not taken my survey, please take five minutes to do so this week. By the end of this month I would like to have 200 responses, and currently I have 157.

Thank you for your time. Please click on the link at the bottom of this email to take my survey.

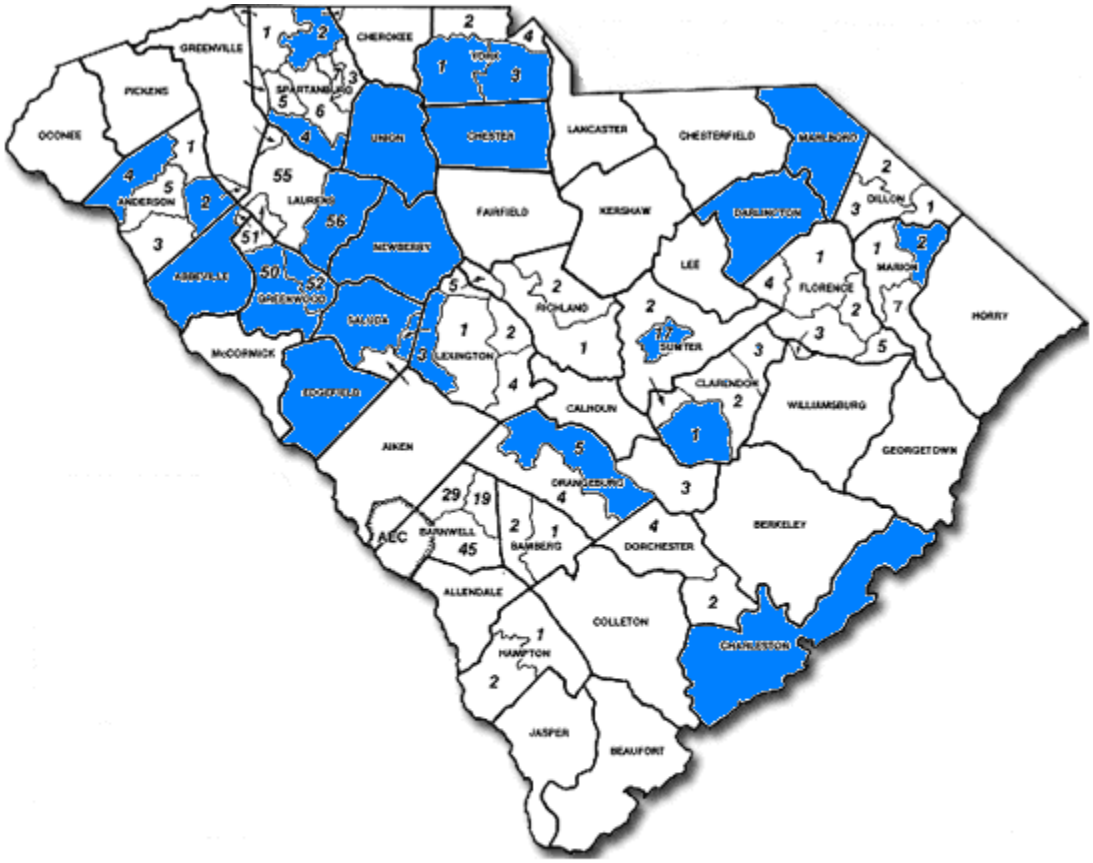
Thank you,
Amy Gregory Young
(864) 227-8845

Click on the following link to take the survey: Click Here
<http://www.surveymethods.com/EndUser.aspx?E1D7A9B3E1A5B6BAE7ABB6>
Or copy and paste the following link in your browser to take the survey:
http://www.surveymethods.com/EndUser.aspx?E1D7A9B3E1A5B6BAE7ABB6

Click on the following link to not take this and other surveys from us:
Click Here
<http://www.surveymethods.com/EndUser.aspx?E1DDA9B3E1A5B6BAE7ABB6>
If clicking on the link does not work, copy and paste the following URL into your browser.
http://www.surveymethods.com/EndUser.aspx?E1DDA9B3E1A5B6BAE7ABB6

Appendix E

Map of Participating Districts



Appendix F

Indicator Variables

Variable	Question from the Survey	Intended Latent Variable
Talk	1. Is talkative	Social Appraisal Skills
Fault	2. Tends to find fault with others	Social Appraisal Skills
Thorough	3. Does a thorough job	Personality
Blue	4. Is depressed, blue	Personality
Original	5. Is original, comes up with new ideas	Cognitive Abilities
Reserved	6. Is reserved	Social Appraisal Skills
Helpful	7. Is helpful and unselfish with others	Social Appraisal Skills
Careless	8. Can be somewhat careless	Personality
Relaxed	9. Is relaxed, handles stress well	Personality
Curious	10. Is curious about many different things	Cognitive Abilities
Energy	11. Is full of energy	Social Appraisal Skills
Quarrels	12. Starts quarrels with others	Social Appraisal Skills
Reliable	13. Is a reliable worker	Personality
Tense	14. Can be tense	Personality
Thinker	15. Is ingenious, a deep thinker	Cognitive Abilities
Enthusia	16. Generates a lot of enthusiasm	Social Appraisal Skills
Forgive	17. Has a forgiving nature	Social Appraisal Skills
Disorgan	18. Tends to be disorganized	Personality
Worries	19. Worries a lot	Personality
Imagine	20. Has an active imagination	Cognitive Abilities
Quiet	21. Tends to be quiet	Social Appraisal Skills
Trusting	22. Is generally trusting	Social Appraisal Skills
Lazy	23. Tends to be lazy	Personality
Stable	24. Is emotionally stable, not easily upset	Personality
Invent	25. Is inventive	Cognitive Abilities
Assert	26. Has an assertive personality	Social Appraisal Skills
Aloof	27. Can be cold and aloof	Social Appraisal Skills
Persever	28. Perseveres until the task is finished	Personality
Moody	29. Can be moody	Personality
Artistic	30. Values artistic, aesthetic experiences	Cognitive Abilities
Shy	31. Is sometimes shy, inhibited	Social Appraisal Skills
Kind	32. Is considerate and kind to almost everyone	Social Appraisal Skills
Efficien	33. Does things efficiently	Personality
Calm	34. Remains calm in tense situations	Personality
Routine	35. Prefers work that is routine	Cognitive Abilities
Outgoing	36. Is outgoing, sociable	Social Appraisal Skills
Rude	37. Is sometimes rude to others	Social Appraisal Skills

Variable	Question from the Survey	Intended Latent Variable
FolThrou	38. Makes plans and follows through with them	Personality
Nervous	39. Gets nervous easily	Personality
Reflect	40. Likes to reflect, play with ideas	Cognitive Abilities
NotArt	41. Has few artistic interests	Cognitive Abilities
Cooperat	42. Likes to cooperate with others	Social Appraisal Skills
Distract	43. Is easily distracted	Personality
Sophisti	44. Is sophisticated in art, music, or literature	Cognitive Abilities
Influenc	45. Is concerned about influencing others to achieve school goals	Motives and Values
Expertis	46. Possesses expertise in the educational field	Expertise and Tacit Knowledge
Overcome	47. Acts to overcome obstacles	Problem-solving
NotKnow	48. Experiences feelings of not knowing how to respond to given situations	Sensemaking
WinArgue	49. Strives to win arguments to maintain authority	Motives and Values
Research	50. Stays current with educational research	Expertise and Tacit Knowledge
Challeng	51. Perseveres when faced with a challenge	Problem-solving
Meaning	52. Creates meaning out of a series of Complex events	Sensemaking
TakeResp	53. Is willing to assume responsibility	Motives and Values
CourseWk	54. Utilizes information obtained from administrative coursework	Expertise and Tacit Knowledge
ChoiceAc	55. Makes choices and takes action instead of just reacting	Problem-solving
UStanAmb	56. Seeks to understand ambiguous acts	Sensemaking
PosPower	57. Utilizes positional power to maintain authority	Motives and Values
PrePost	58. Uses experiences from previous administrative positions	Expertise and Tacit Knowledge
SolvCrea	59. Solves problems creatively	Problem-solving
Adlibs	60. Improvises or adlibs plans of action	Sensemaking
PerValue	61. Makes decisions based on personal values	Motives and Values
Networks	62. Networks with colleagues to obtain information	Expertise and Tacit Knowledge
ExpPrSo	63. Utilizes experience when problem-solving	Problem-solving
NotComp	64. Experiences situations that can not be fully comprehended	Sensemaking

Variable	Question from the Survey	Intended Latent Variable
PerBelie	65. Dominates the school's culture with personal beliefs	Motives and Values
ProfDev	66. Stays current by attending professional development conferences/workshops	Expertise and Tacit Knowledge
WkOthers	67. Works with others to solve problems	Problem-solving
ComSitua	68. Interprets complex situations for followers	Sensemaking
Persist	69. Is persistent and follows through with matters	Problem-solving

Appendix G

Survey

Leader Attributes and the Principalship

Please respond to the following statements as you feel they pertain to persons in the principalship. For example, do you agree that someone in the principalship *likes to spend time with others*? Please write a number next to each statement to indicate the extent to which **you agree or disagree with that statement.**

1 Disagree Strongly	2 Disagree a little	3 Neither agree nor disagree	4 Agree a little	5 Agree strongly

A person in the principalship…

1. _____ Is talkative
2. _____ Tends to find fault with others
3. _____ Does a thorough job
4. _____ Is depressed, blue
5. _____ Is original, comes up with new ideas
6. _____ Is reserved
7. _____ Is helpful and unselfish with others
8. _____ Can be somewhat careless
9. _____ Is relaxed, handles stress well.
10. _____ Is curious about many different things
11. _____ Is full of energy
12. _____ Starts quarrels with others
13. _____ Is a reliable worker
14. _____ Can be tense
15. _____ Is ingenious, a deep thinker
16. _____ Generates a lot of enthusiasm
17. _____ Has a forgiving nature
18. _____ Tends to be disorganized
19. _____ Worries a lot
20. _____ Has an active imagination
21. _____ Tends to be quiet
22. _____ Is generally trusting
23. _____ Tends to be lazy
24. _____ Is emotionally stable, not easily upset
25. _____ Is inventive
26. _____ Has an assertive personality
27. _____ Can be cold and aloof
28. _____ Perseveres until the task is finished
29. _____ Can be moody
30. _____ Values artistic, aesthetic experiences
31. _____ Is sometimes shy, inhibited
32. _____ Is considerate and kind to almost everyone
33. _____ Does things efficiently
34. _____ Remains calm in tense situations
35. _____ Prefers work that is routine
36. _____ Is outgoing, sociable
37. _____ Is sometimes rude to others
38. _____ Makes plans and follows through with them
39. _____ Gets nervous easily
40. _____ Likes to reflect, play with ideas
41. _____ Has few artistic interests
42. _____ Likes to cooperate with others
43. _____ Is easily distracted
44. _____ Is sophisticated in art, music, or literature

1 Disagree Strongly	2 Disagree a little	3 Neither agree nor disagree	4 Agree a little	5 Agree strongly

A person in the principalship...

45. _____ Is concerned about influencing others to achieve school goals

46. _____ Possesses expertise in the educational field

47. _____ Acts to overcome obstacles

48. _____ Experiences feelings of not knowing how to respond to given situations

49. _____ Strives to win arguments to maintain authority

50. _____ Stays current with educational research

51. _____ Perseveres when faced with a challenge

52. _____ Creates meaning out of a series of complex events

53. _____ Is willing to assume responsibility

54. _____ Utilizes information obtained from administrative coursework

55. _____ Makes choices and takes action instead of just reacting

56. _____ Seeks to understand ambiguous acts

57. _____ Utilizes positional power to maintain authority

58. _____ Uses experiences from previous administrative positions

59. _____ Solves problems creatively

60. _____ Improvises or adlibs plans of action

61. _____ Makes decisions based on personal values

62. _____ Networks with colleagues to obtain information

63. _____ Utilizes experience when problem-solving

64. _____ Experiences situations that can not be fully comprehended

65. _____ Dominates the school's culture with personal beliefs

66. _____ Stays current by attending professional development conferences/workshops

67. _____ Works with others to solve problems

68. _____ Interprets complex situations for followers

69. _____ Is persistent and follows through with matters

70. How many years have you been an educator?
a. 1-5 years *b. 6-10 years*
c. 11-15 years *d. 16-20 years*
e. 21 years or more

71. Of your years in education, how many of them have been spent in administration?
a. 1-5 years *b. 6-10 years*
c. 11-15 years *d. 16-20 years*
e. 21 years or more

72. Which level best describes the school of which you are principal?
a. Career *b. Elementary*
c. High *d. Intermediate*
e. Middle *f. Primary*

73. What is your gender?
a. Male *b. Female*

74. What is your race?
a. African-American *b.* Caucasian
c. Asian/Pacific Is *d.* Hispanic
e. Other

REFERENCES

Andersen, J. A. (2006). Leadership, personality, and effectiveness. *The Journal of Socio-Economics, 35,* 1078-1091.

Barnard, C. I. (1938). *The functions of the executive.* Cambridge, MA: Harvard University Press.

Barrick, M. R., Stewart, G. L., & Piotrowski, M. (2002). Personality and job performance: Test of the mediating effects of motivation among sales representatives. *Journal of Applied Psychology, 87,* 43-51.

Bass, B. M. (1990). Bass and Stogdill's handbook of leadership, (3rd ed.). New York: Free Press.

Benet-Martinez, V., & John, O. P. (1998). *Los Cinco Grandes* across cultures and ethnic groups: Multitrait multimethod analyses of the Big Five in Spanish and English. *Journal of Personality and Social Psychology, 75,* 729-750.

Bennis, W. (2007). The challenges of leadership in the modern world. *American Psychologist, 62*, 2-5.

Bono, J. E., & Judge, T. A. (2004). Personality and transformational and transactional leadership. A meta-analysis. *Journal of Applied Psychology, 89,* 901-901.

Bouchard, T. J., & Loehlin, J. C. (2001). Genes, personality and evolution. *Behavior Genetics, 31,* 243-273.

Byrne, B. M. (2010). Structural equation modeling with AMOS, (2nd ed.). New York: Routledge.

Chatterjee, A., & Hambrick, D. C. (2007). It's all about me: Narcissistic chief executive officers and their effects on company strategy and performance. *Administrative Science Quarterly, 52,* 351-386.

Chan, K., & Drasgow, F. (2001). Toward a theory of individual difference and leadership: Understanding the motivation to lead. *Journal of Applied Psychology, 86,* 481-498.

Chan, K., Rounds, J., & Drasgow, F. (2000). The relation between vocational interests and the motivation to lead. *Journal of Vocational Behavior, 57,* 226-245.

Chen, G., Gully, S. M., Whiteman, J., & Kilcullen, R. N. (2000). Examination of relationships among trait-like individual differences, state-like individual differences, and learning performance. *Journal of Applied Psychology, 85,* 835-847.

Côté, S., Lopes, P. N., Salovey, P., & Miners, C. T. H. (2010). Emotional intelligence and leadership emergence in small groups. *The Leadership Quarterly, 21,* 496-508.

Connelly, M. S., Gilbert, J. A., Zaccaro, S. J., Threlfall, K. V., Marks, M. A., & Mumford, M. D. (2000). Exploring the relationship of leadership skills and knowledge to leader performance. *The Leadership Quarterly, 11,* 65-86.

Cozzolino, P. J., & Snyder, M. (2008). Good times, bad times: How personal disadvantage moderates the relationship between social dominance and efforts to win. *Personality and Social Psychology Bulletin, 34,* 1420-1433.

Darling-Hammond, L., LaPointe, M., Meyerson, D., Orr, M. T., & Cohen, C. (2007). *Preparing school leaders for a changing world: Lessons from exemplary leadership development programs.* Stanford, CA: Stanford University, Stanford Educational Leadership Institute.

DeLuga, R. J. (1997). Relationship among American Presidential charismatic…. *The Leadership Quarterly, 8,* 49-65.

Educational Leadership Policy Standards: ISLLC 2008 as adopted by the National Policy Board for Educational Administration. Retrieved September 10, 2010, from http://www.wallacefoundation.org.

Field, A. (2005). *Discovering statistics using SPSS*. Thousand Oaks, CA: Sage.

Fletcher, J. K. (2004). The paradox of postheroic leadership: An essay on gender, power, and transformational change. *The Leadership Quarterly, 15,* 647-661.

Foti, R. J., & Hauenstein, N. M. (1993). Processing demands and the effects of prior impressions on subsequent judgments: Clarifying the assimilations/contrast debate. *Organizational Behavior and Human Decision Processes, 56,* 167-189.

Frost, P. J. (2004). Handling toxic emotions: New challenges for leaders and their organization. *Organizational Dynamics, 33,* 111-127.

Gilreath, F. B. (1912). *Primer of scientific management.* New York: D. Van Nostrand Co.

Goldring, E., Huff, J., Spillane, J. P., & Barnes, C. (2009). Measuring the learning-centered leadership expertise of school principals. *Leadership and Policy in Schools, 8*, 197-228.

Guastello, S. J. (2007). Non-linear dynamics and leadership emergence. *The Leadership Quarterly, 18,* 357-369.

Gurr, D., Drysdale, L., & Mulford, B. (2006). Models of successful principal leadership. *School Leadership and Management, 26,* 371-395.

Hair, J. F., Anderson, R. E., Tatham, R. L. & Black, W. C. (1998) *Multivariate data analysis with readings, 5th ed.* Englewood Cliffs, NJ: Prentice-Hall.

Heise, D. (1975). *Causal analysis.* New York: Wiley-Interscience.

Hiller, N. J., & Hambrick, D. C. (2005). Conceptualizing executive hubris: The role of (hyper-) core self-evaluations in strategic decision-making. *Strategic Management Journal, 26,* 297-319.

Hogan, R., & Hogan, J. (2001). Assessing leadership: A view from the dark side. *International Journal of Selection and Assessment, 9,* 12-23.

Hogan, J., & Holland, B. (2003). Using theory to evaluate personality and job-performance relations: A socioanalytic perspective. *Journal of Applied Psychology, 88,* 100-112.

Jaeger, R. M. (1984). *Sampling in education and the social sciences.* New York: Longman.

John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm Shift to the Integrative Big-Five Trait Taxonomy: History, Measurement, and Conceptual Issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), Handbook of personality: Theory and research (pp. 114-158). New York, NY: Guilford Press.

John, O. P., Donahue, E. M., & Kentle, R. L. (1991). The Big Five Inventory--Versions 4a and 54. Berkeley, CA: University of California,Berkeley, Institute of Personality and Social Research.

Judge, T. A., Bono, J. E., Ilies, R., & Gerhardt, M. W. (2002). Personality and leadership: A qualitative and quantitative review. *Journal of Applied Psychology, 87,* 765-780.

Judge, T. A., Colbert, A. E., & Ilies, R. (2004). Intelligence and leadership: A quantitative review and test of theoretical propositions. *Journal of Applied Psychology, 89,* 542-552.

Judge, T. A., Piccolo, R. F., & Kosalka, T. (2009). The bright and dark side of leader traits: A review and theoretical extension of the leader trait paradigm. *The Leadership Quarterly, 20*, 855-875.

Katz, R. L. (1955, January-February). Skills of an effective administrator. *Harvard Business Review.*

Kemp, C. F., Zaccaro, S. J., Jordan, M., & Flippo, S. (2004). *Cognitive, social, and dispositional influences on leader adaptability.* Paper presented at the 19th annual meeting of the Society for Industrial and Organizational Psychology, Chicago. IL.

Leithwood, K., Harris, A., & Hopkins, D. (2008). Seven strong claims about successful school leadership. *School Leadership and Management, 28,* 27-42.

Leithwood, K. A., & Riehl, C. (2003). *What we know about successful school leadership*. Philadelphia, PA: Laboratory for Student Success, Temple University.

Lord, R. G., DeVader, C. L., & Alliger, G. M. (1986). A meta-analysis of the relation between personality traits and leadership perceptions: An application of validity generalization procedures. *Journal of Applied Psychology, 71*, 402-410.

Lord, R. G., Foti, R. J., & DeVader, C. L. (1984). A test of leadership categorization theory: Internal structure, information processing, and leadership perceptions. *Organizational Behavior and Human Performance, 34,* 343-378.

Mael, F. A., Waldman, D. A., & Mulqueen, C. (2001). From scientific careers to organizational leadership: Predictors of the desire to enter management on the part of technical personnel. *Journal of Vocational Behavior, 59,* 132-148.

Mann, R. D. (1959). A review of the relationship between personality and performance in small groups. *Psychological Bulletin, 56*, 241-270.

Morrow, I. J., & Stern, M. (1990). Stars, adversaries, producers, and phantoms at work: A new leadership typology. In K. E. Clark & M. B. Clark (Eds.), *Measures of leadership* (pp. 419-440). Greensboro, NC: Center for Creative Leadership.

Mumford, M. D., Zaccaro, S. J., Harding, F. D., Jacobs, T. O., & Fleishman, E. A. (2000). Leadership skills for a changing world: Solving complex social problems. *The Leadership Quarterly, 11,* 11-35.

Mumford, M. D., Zaccaro, S. J., Johnson, J. F., Diana, M., Gilbert, J. A., & Threlfall, K. V. (2000). Patterns of leader characteristics: Implications for performance and development. *The Leadership Quarterly, 11,* 115-133.

Murphy, J. T. (2000). The unheroic side of leadership. In *The Jossey-Bass reader on educational leadership* (pp. 114-125). San Francisco, CA: Jossey-Bass.

Northouse, P. G. (2004). *Leadership theory and practice.* Thousand Oaks, CA: Sage.

Olson, J. M., Vernon, P. A., Harris, J. A., & Jang, K. L. (2001). The heritability of attitudes: A study of twins. *Journal of Personality and Social Psychology, 80,* 845-860.

Ospina, S. & Foldy, E. (2009). A critical review of race and ethnicity in the leadership literature: Surfacing context, power and the collective dimensions of leadership. *The Leadership Quarterly, 20,* 876-896.

Schaubroeck, J., Walumbwa, F. O., Ganster, D. C., & Kepes, S. (2007). Destructive leader traits and the neutralizing influence of an "enriched" job. *The Leadership Quarterly, 18,* 236-251.

Selznick, P. (1957). *Leadership in administration.* New York: Harper and Row.

Shakeshaft, C. & Nowell, I. (1984). Research on theories, concepts, and models of organizational behavior: The influence of gender. *Issues in Education, 11,* 186-203.

Simonton, D. K. (1986). Presidential personality: Biographical use of the Gough Adjective Check List. *Journal of Personality and Social Psychology, 51,* 149-160.

Sleegers, P., Wassink, H., Veen, K., & Imants, J. (2009). School leaders' problem framing: A sense-making approach to problem-solving processes of beginning school leaders. *Leadership and Policy in Schools, 8,* 152-172.

Son Hing, L. S., Bobocel, D. R., Zanna, M., & McBride, M. V. (2007). Authoritarian dynamics and unethical decision making: High social dominance orientation leaders and high right-wing authoritarianism followers. *Journal of Personality and Social Psychology, 92,* 67-81.

Spillane, J. P., White, K. W., & Stephan, J. L. (2009). School principal expertise: Putting expert-aspiring principal differences in problem solving processes to the test. *The Leadership Quarterly, 8*, 128-151.

Sternberg, R. J. (2008). The WICS approach to leadership: Stories of leadership and the structures and processes that support them. *The Leadership Quarterly, 19,* 360-371.

Stogdill, R. M. (1948). Personal factors associated with leadership: A survey of the literature. *Journal of Psychology, 25,* 35-71.

Taylor, F. (1911). *The principles of scientific management.* New York: Harper.

Turkheimer, E. (2000). Three laws of behavior genetics and what they mean. *Current Directions in Psychological Science, 9*, 160-164.

Uhl-Bien, M., Marion, R., & McKelvey, B. (2007). Complexity leadership theory: Shifting leadership from the industrial age to the knowledge era. *The Leadership Quarterly, 18,* 298-318.

Vroom, V. H., & Jago, A. G. (2007). The role of the situation in leadership. *American Psycohologist, 62,* 17-18.

Weick, K. E. (1993). The collapse of sensemaking in organizations: The Mann Gulch disaster. *Administrative Science Quarterly, 38,* 628-652.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science, 16,* 409-421.

Yukl, G. (2002). *Leadership in organizations,* (5th ed.). Upper Saddle River, NJ: Prentice-Hall.

Zaccaro, S. J. (2002). Organizational leadership and social intelligence. In R. Riggio (Ed.), *Multiple intelligences and leadership* (pp. 29-54). Mahwah, NJ: Erlbaum.

Zaccaro, S. J. (2007). Trait-based perspectives of leadership. *American Psychologist, 62,* 6-16.

Zaccaro, S. J., Gilbert, J. A., Thor, K. K., & Mumford, M. D. (1991). Leadership and social intelligence: Linking social perceptiveness and behavioral flexibility to leader effectiveness. *The Leadership Quarterly, 2,* 317-331.

Zaccaro, S. J., Kemp, C., & Bader, P. (2004). Leader traits and attributes. In J. Antonakis, A. T. Cianciolo, and R. J. Sternberg (Eds.), *The nature of leadership* (pp. 101-124). Thousand Oaks, CA: Sage.

Zaccaro, S. J., White, L., Kilcullen, R., Parker, C., Williams, D., O'Connor-Boes, J. (1997). *Cognitive and temperament predictors of Army civilian leadership* (Tech. Rep. 97-1). Bethesda, MD: Management Research Institute, Inc.

Zuckerman, M., & O'Loughlin, R. E. (2006). Self-enhancement by social comparison: A prospective analysis. *Personality and Social Psychology Bulletin.*